Magnesium Sulfate

A Medical Dictionary, Bibliography,
and Annotated Research Guide to
Internet References

James N. Parker, M.D.
and Philip M. Parker, Ph.D., Editors

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The collective knowledge generated from academic and applied research summarized in various references has been critical in the creation of this book which is best viewed as a comprehensive compilation and collection of information prepared by various official agencies which produce publications on magnesium sulfate. Books in this series draw from various agencies and institutions associated with the United States Department of Health and Human Services, and in particular, the Office of the Secretary of Health and Human Services (OS), the Administration for Children and Families (ACF), the Administration on Aging (AOA), the Agency for Healthcare Research and Quality (AHRQ), the Agency for Toxic Substances and Disease Registry (ATSDR), the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the Healthcare Financing Administration (HCFA), the Health Resources and Services Administration (HRSA), the Indian Health Service (IHS), the institutions of the National Institutes of Health (NIH), the Program Support Center (PSC), and the Substance Abuse and Mental Health Services Administration (SAMHSA). In addition to these sources, information gathered from the National Library of Medicine, the United States Patent Office, the European Union, and their related organizations has been invaluable in the creation of this book. Some of the work represented was financially supported by the Research and Development Committee at INSEAD. This support is gratefully acknowledged. Finally, special thanks are owed to Tiffany Freeman for her excellent editorial support.

About the Editors

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FORWARD

In March 2001, the National Institutes of Health issued the following warning: "The number of Web sites offering health-related resources grows every day. Many sites provide valuable information, while others may have information that is unreliable or misleading."[1] Furthermore, because of the rapid increase in Internet-based information, many hours can be wasted searching, selecting, and printing. Since only the smallest fraction of information dealing with magnesium sulfate is indexed in search engines, such as **www.google.com** or others, a non-systematic approach to Internet research can be not only time consuming, but also incomplete. This book was created for medical professionals, students, and members of the general public who want to know as much as possible about magnesium sulfate, using the most advanced research tools available and spending the least amount of time doing so.

In addition to offering a structured and comprehensive bibliography, the pages that follow will tell you where and how to find reliable information covering virtually all topics related to magnesium sulfate, from the essentials to the most advanced areas of research. Public, academic, government, and peer-reviewed research studies are emphasized. Various abstracts are reproduced to give you some of the latest official information available to date on magnesium sulfate. Abundant guidance is given on how to obtain free-of-charge primary research results via the Internet. **While this book focuses on the field of medicine, when some sources provide access to non-medical information relating to magnesium sulfate, these are noted in the text.**

E-book and electronic versions of this book are fully interactive with each of the Internet sites mentioned (clicking on a hyperlink automatically opens your browser to the site indicated). If you are using the hard copy version of this book, you can access a cited Web site by typing the provided Web address directly into your Internet browser. You may find it useful to refer to synonyms or related terms when accessing these Internet databases. **NOTE:** At the time of publication, the Web addresses were functional. However, some links may fail due to URL address changes, which is a common occurrence on the Internet.

For readers unfamiliar with the Internet, detailed instructions are offered on how to access electronic resources. For readers unfamiliar with medical terminology, a comprehensive glossary is provided. For readers without access to Internet resources, a directory of medical libraries, that have or can locate references cited here, is given. We hope these resources will prove useful to the widest possible audience seeking information on magnesium sulfate.

The Editors

[1] From the NIH, National Cancer Institute (NCI): **http://www.cancer.gov/cancerinfo/ten-things-to-know**.

CHAPTER 1. STUDIES ON MAGNESIUM SULFATE

Overview

In this chapter, we will show you how to locate peer-reviewed references and studies on magnesium sulfate.

Federally Funded Research on Magnesium Sulfate

The U.S. Government supports a variety of research studies relating to magnesium sulfate. These studies are tracked by the Office of Extramural Research at the National Institutes of Health.[2] CRISP (Computerized Retrieval of Information on Scientific Projects) is a searchable database of federally funded biomedical research projects conducted at universities, hospitals, and other institutions.

Search the CRISP Web site at **http://crisp.cit.nih.gov/crisp/crisp_query.generate_screen**. You will have the option to perform targeted searches by various criteria, including geography, date, and topics related to magnesium sulfate.

For most of the studies, the agencies reporting into CRISP provide summaries or abstracts. As opposed to clinical trial research using patients, many federally funded studies use animals or simulated models to explore magnesium sulfate. The following is typical of the type of information found when searching the CRISP database for magnesium sulfate:

- **Project Title: COOPERATIVE MULTICENTER NEONATAL RESEARCH NETWORK**

  Principal Investigator & Institution: Lemons, James A.; Pediatrics; Indiana Univ-Purdue Univ at Indianapolis 620 Union Drive, Room 618 Indianapolis, in 462025167

  Timing: Fiscal Year 2002; Project Start 01-APR-1991; Project End 31-MAR-2006

[2] Healthcare projects are funded by the National Institutes of Health (NIH), Substance Abuse and Mental Health Services (SAMHSA), Health Resources and Services Administration (HRSA), Food and Drug Administration (FDA), Centers for Disease Control and Prevention (CDCP), Agency for Healthcare Research and Quality (AHRQ), and Office of Assistant Secretary of Health (OASH).

Summary: Indiana University Medical Center has been an active member of the Neonatal Research Network since 1991. Particular strengths of the Indiana Center include a large patient population, design of new randomized trials for the Network, effective enrollment of subjects in Network protocols, eighteen neonatology faculty with extensive experience and expertise in basic and clinical research, an established newborn follow-up program, excellent infrastructure and support staff, and important collaborative research programs with other departments and university centers. Since 1995 (starting year of the second competitive renewal of the Network grant) the faculty within the Section of Neonatal-Perinatal Medicine has had 20 NIH grants and 49 other extramural awards, and has published over 200 manuscripts during that period. Indiana University School of Medicine is the only medical school and the site of the only comprehensive children's hospital in Indiana. The Medical Center serves as the principal referral center for pediatric subspecialty care for the entire state, which has a population of 5.9 million and 87,000 births annually. Further, the Indiana Center expanded in 1997 when Methodist Hospital (a large community hospital with a high risk obstetric service and NICU) merged with the Medical Center. Indiana has a strong record of participation in and contribution to the Neonatal Research Network. During the past four years Indiana enrolled an average of 334 VLBW infants yearly in the generic data base, and 390 infants in 1999 (the largest of any center). Indiana has participated in 12 trials since 1995, contributing 34/235 subjects to the Neonatal Inhaled Nitric Oxide Study 45/170 and 24/115 infants to the two Erythropoietin trials, 3/16 infants to date in the Hypothermia and Hypoxic Ischemic Encephalopathy study, and 65 of 300 to date in the Glutamine Trial. Indiana faculty chaired and developed the Newborn Follow-up Program, the Glutamine Trial, the **Magnesium Sulfate** Subcommittee and the Protocol Review Subcommittee, chaired the GDB Subcommittee, and served on nine other subcommittees. The clinical and basic research of the neonatology faculty is focused on molecular immunology, developmental hematopoiesis, and fetal/neonatal nutrition and metabolism. These research programs lend themselves to ancillary studies of the Neonatal Network; one currently active and six other ancillary studies were designed and initiated by Indiana faculty. Collaborative support has been provided by other investigators, departments and centers when additional expertise and/or resources could benefit Network protocols. Indiana University brings to the Neonatal Network a large patient population, a uniquely balanced program of clinical service and research, and a strong record of participation and accomplishment.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: COOPERATIVE MULTICENTER NETWORK OF NEONATAL INTENSIVE C***

  Principal Investigator & Institution: Shankaran, Seetha; Professor; Pediatrics; Wayne State University 656 W. Kirby Detroit, Mi 48202

  Timing: Fiscal Year 2002; Project Start 01-APR-1991; Project End 31-MAR-2006

  Summary: (Provided by Applicant) The Wayne State University School of Medicine at the Detroit Medical Center is submitting an application for renewal in the NICHD Multicenter Neonatal Research Network. The Division of Neonatal-Perinatal Medicine has both an inborn service at Hutzel Hospital (6000 deliveries, 55 bed NICU/Progressive Care Nursery) and an outborn service at Children?s Hospital of Michigan (45 bed NICU). The Division of Maternal-Fetal Medicine at Wayne State is currently a member of the NICHD Multicenter Materna/-Fetal Research Network (MFM). The Division of Clinical Pharmacology at Wayne State is currently a member of the NICHD Pediatric Pharmacology Research Unit (PPRU). The Wayne State site has

additional capabilities of including two more Detroit Medical Center inborn hospitals (Sinai-Grace Hospital, 4000 deliveries and Huron Valley Hospital, 2000 deliveries) into the Neonatal Research Network with the site PI who is the Regional Director of the Detroit Medical Center?s Neonatal Programs. The Wayne State site has actively participated in the current NICHD Neonatal Research Network studies by contributing a greater number of subjects than the average enrollment per site. These studies include 1134 subjects enrolled in the Generic Database Study, 366 in the Follow-up Study, 28 in the Erythropoiten Study, 157 in the **Magnesium Sulfate** Study, and 61 in the Vitamin A Study. In two studies, the Wayne State site has far exceeded enrollment. These include the Early Inhaled Nitric Oxide Study, Wayne State has enrolled 32 of 203 subjects and the Network study on Hypothermia for Encephalopathy where Wayne State has enrolled 4 of 22 subjects. In the Maternal Lifestyle Study (4 sites), Wayne State has enrolled 43% of all infants enrolled in Phase II and III of the study. I n the current grant period, the Principal Investigator at the Wayne State University site, Dr. Seetha Shankaran, served as PI for the Antenatal Phenobarbital to Prevent IVH Study and is currently PI of the Induced Hypothermia for Encephalopathy Study. Strengthens of the Wayne State site include neonatal imagining abilities (PET and MRI), obstetric imaging capabilities, the fetal diagnosis and therapy program and ongoing collaboration with the NICHD MFMU Network and the NICHD PPRU Network.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: EFFECT OF MAGNESIUM REPLACEMENT ON VENTRICULAR ARRHYTHMIAS IN CHF PATIENTS**

  Principal Investigator & Institution: Schulman, Steven P.; Johns Hopkins University 3400 N Charles St Baltimore, Md 21218

  Timing: Fiscal Year 2002

  Summary: To date, we have enrolled 17 patients into the current study. Patients were randomized in a double-blind fashion to receive either placebo or **magnesium sulfate** infusion. Thus far we have confirmed that patients with congestive heart failure are profoundly deficient in their intracellular magnesium concentrations. These levels are transiently normalized by infusion of 12.5 grams of intravenous **magnesium sulfate.** The mean concentrations at twenty-four hours are within the normal limits. At forty-eight hours there is a mild decrease in the mean magnesium concentrations. At one week, the mean levels are similar to baseline. There is a temporal improvement in premature ventricular contractions, as measured by Holter monitoring, which correlates with intracellular magnesium concentrations. In May 1997, we performed a series of interim statistical analyses on the relationship between intracellular magnesium concentration and repolarization parameters in fifteen patients. There is a trend that approaches statistical significance between a rise in intracellular magnesium concentrations and a decrease in the QT variability index (approaching the normal limits). We hope that as we accumulate more data, this relationship will become statistically significant.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: ENERGY METABOLISM**

  Principal Investigator & Institution: Smith, Michael B.; Chief, Center for Nmr Research; Pennsylvania State Univ Hershey Med Ctr 500 University Drive Hershey, Pa 170332390

  Timing: Fiscal Year 2002; Project Start 01-JUL-2002; Project End 30-JUN-2003

Summary: The overall objective of this research component is to investigate the high-energy biochemical mechanisms whereby the perinatal brain is damaged by hypoxia-ischemia and how brain injury can be prevented or reduced through specific modalities of therapy. Specific Aims include: 1) to characterize the earliest alterations in high-energy phosphate reserves which occur during perinatal cerebral hypoxia-ischemia and to correlate these changes with perturbations in cerebral energy utilization, cerebral glucose utilization, glutamate and nitric oxide neurotoxicity, and intracellular calcium accumulation; 2) to correlate the concentrations in cerebral high-energy phosphate reserves and the changes which occur during hypoxia-ischemia using 31P magnetic resonance (MR) spectroscopic methods and enzymatic, fluorometric techniques; 3) to characterize the secondary (delayed) energy failure which occurs during recovery from perinatal cerebral hypoxia-ischemia and to correlate the alterations with the presence and severity of hypoxia-ischemic brain damage; 4) to ascertain underlying biochemical mechanisms whereby the glucocorticosteroid, dexamethasone, protects the perinatal brain from hypoxic-ischemic damage; 5) to determine the protective influence of **magnesium sulfate** on perinatal hypoxic-ischemic brain damage and, if so, to ascertain its mechanism of action; and 6) to investigate further the presence and extend of alterations in diffusion-weighted and T2-weighted imaging during recovery from perinatal cerebral hypoxia-ischemia and to correlate any changes with the nature and extent of cerebral edema and associated neuropathologic alterations. Seven-days postnatal rats will undergo unilateral cerebral hypoxia-ischemia, during and following which the animals will undergo those procedures necessary to obtain sequential 31P and 1H NMR spectra which will allow for measurements of the alterations in high-energy phosphate reserves and other metabolites which result from the insult. Other animals will undergo MR imaging at specific intervals following cerebral hypoxia-ischemia. Other experiments will elucidate the neuroprotective effect of dexamethasone, **magnesium sulfate,** and L-NAME on hypoxic-ischemic brain damage in the developing rat. Analytic procedures will include sequential measures with NMR spectroscopy as well as brain tissue analysis of high-energy phosphate reserves and other metabolites using enzymatic, fluorometric techniques.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: FIELD ADMINISTRATION OF STROKE THERAPY - MAGNESIUM TRIAL**

  Principal Investigator & Institution: Saver, Jeffrey L.; Neurology; University of California Los Angeles 10920 Wilshire Blvd., Suite 1200 Los Angeles, Ca 90024

  Timing: Fiscal Year 2003; Project Start 30-SEP-2003; Project End 31-DEC-2007

  Summary: (provided by the applicant): Stroke is the third leading cause of death and the leading cause of adult disability in the United States. Each year in the U.S., 750,000 Americans suffer a symptomatic stroke, and over 11 million suffer an asymptomatic stroke. The central aim of this proposal is to demonstrate that paramedic initiation of the neuroprotective agent **magnesium sulfate** in the field is an efficacious and safe treatment for acute stroke. The proposal is a multicenter, randomized, double-blind, Phase 3 clinical trial, using intention to treat analysis, of **magnesium sulfate** versus placebo among ambulance-transported patients with acute stroke. A study agent will be initiated within two hours of stroke onset in all enrolled individuals, and within one hour of onset in approximately one-half of enrolled individuals. A total of 1,270 patients will be enrolled, 635 in each treatment arm. The dose of **magnesium sulfate** employed will be 4 gram IV loading dose over 15 minutes, followed by 16 gram IV maintenance dose over 24 hours. The primary study hypothesis is that treatment with **magnesium**

sulfate improves the long-term functional outcome of hyperacute stroke patients. The primary study endpoint will be the difference in distribution of scores between **magnesium sulfate** and placebo groups on the modified Rankin Scale measure of global handicap, assessed 3 months post-stroke. Secondary analyses will analyze treatment efficacy on endpoints indexing neurologic deficit, activities of daily living, global outcome, and quality-of-life, and in prespecified patient subgroups, including patients with ischemic stroke, ischemic stroke co-treated with tissue plasminogen activator, ischemic stroke not co-treated with tissue plasminogen activator, intracerebral hemorrhage, patients treated within 15-60 minutes of symptom onset, and within 61-120 minutes of symptom onset. Successful conduct of the trial will serve as a pivotal test of the promising neuroprotective agent **magnesium sulfate** in acute stroke, and will also demonstrate for the first time that field enrollment and treatment of acute stroke patients is a practical and feasible strategy for Phase 3 stroke trials, permitting enrollment of greater numbers of patients in hyperacute time windows.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: INDOMETHACIN FOR ADJUVANT TOCOLYSIS**

  Principal Investigator & Institution: Macones, George A.; Associate Professor and Director; Obstetrics and Gynecology; University of Pennsylvania 3451 Walnut Street Philadelphia, Pa 19104

  Timing: Fiscal Year 2002; Project Start 30-SEP-1999; Project End 30-NOV-2004

  Summary: (Adapted from Investigator's Abstract) Preterm labor is a common and serious complication in pregnancy in the United States, occurring in approximately 400,000 pregnancies per year. **Magnesium sulfate** is currently the most commonly prescribed agent for tocolysis in the United States. However, up to 35% of patients treated with **magnesium sulfate** fail therapy. In this setting, the most common strategy in the United States is to add indomethacin as adjuvant therapy. Unfortunately, there are no data to support that this strategy will improve outcome. In addition, recent data suggested that neonatal outcome may be worsened when indomethacin is used in this setting. The goal of the project is to use a randomized clinical trial to test the hypothesis that indomethacin, when used for adjuvant tocolysis in preterm labor (i.e., in those who are failing to respond to conventional first-line therapy) can decrease the rate of major neonatal complications and death. The proposed research project will use a double-blind, parallel, randomized, controlled clinical trial design to compare the efficacy of indomethacin to placebo for adjuvant tocolysis in pregnancies less than 30 weeks gestation. Patients will be recruited for this study from the Labor and Delivery wards of the Hospital of the University of Pennsylvania, Pennsylvania Hospital, Thomas Jefferson University Hospital, and Christiana Care Health Services. Patients who fail first-line therapy with **magnesium sulfate** will be evaluated for possible enrollment into this randomized clinical trial. Those who give informed consent will be enrolled into the study. This study calls for the enrollment of 205 patients in both arms. Patients will be randomized to receive either indomethacin rectal suppositories (50 mg every 6 hours) or identical-appearing placebo suppositories for a maximum of 48 hours. After completion of treatment with either placebo or indomethacin, patient care will be largely at the discretion of the attending physicians. Many prior studies of tocolysis have used variable periods of delay in delivery as the primary outcome measure. The investigators believe that this is not the appropriate primary endpoint, since the ultimate goal of tocolysis is to improve neonatal outcome. Thus, although delivery delay will be analyzed as a secondary endpoint, the primary outcome (on which the sample size is based) will be based on neonatal morbidity. Specifically, the primary outcome measure

for this study will be a dichotomous composite neonatal morbidity/mortality outcome measure. A neonate will be classified as having an adverse neonatal outcome if he/she suffers from any major morbid condition (defined as necrotizing enterocolitis, death, intraventricular hemorrhage, respiratory distress syndrome, or chronic lung disease). Secondary outcomes for analysis will include: (1) time from randomization until delivery, (2) mean gestational age at delivery, (3) major maternal side effects, (4) need for re-admission for tocolysis, (5) infant birth weight, and others.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: MAGNESIUM AS A NEUROPROTECTIVE AGENT FOR PEDIATRIC TBI**

  Principal Investigator & Institution: Shaffner, Donald H.; Anesthesiology/Crit Care Med; Johns Hopkins University 3400 N Charles St Baltimore, Md 21218

  Timing: Fiscal Year 2002; Project Start 25-SEP-2001; Project End 31-AUG-2004

  Summary: (provided by applicant): The overall objective of this collaborative, multi-institutional project is to provide preliminary information required for subsequent, full-scale clinical trials of novel therapies for children with severe traumatic brain injury (TBI). This study will contribute both pediatric safety data for a specific pharmacotherapy (**magnesium sulfate**) and demonstrate the applicability in children of novel methods for assessing the effects of such therapy on the neuronal extracellular environment (cerebral microdialysis). Magnesium has a good safety profile and is being tested in pilot studies of adults with stroke and subarachnoid hemorrhage for its neuroprotective potential. There are, however, no data regarding its safety or efficacy in children with TBI. Cerebral microdialysis is being used both clinically and in research settings directed to adult TBI, but has not been used in children. The following Specific Aims address these gaps: 1. to examine the safety of magnesium for children with severe traumatic brain injury and therefore potentially compromised cerebral perfusion; 2) to examine the short-term efficacy of magnesium in modifying molecular markers of secondary brain injury 3) to examine the feasibility of measuring longer-term efficacy using clinical outcomes (functional, neuropsychological, and behavioral measures) as well as indicators of the severity of structural injury by MRI at three months post-injury. We will implement a randomized, placebo-controlled trial of magnesium in children with severe TBI who require intensive care and intracranial pressure monitoring. Based on subject availability with proposed inclusion/exclusion criteria, 24 subjects will be randomized. Clinically-required intracranial pressure monitoring will be accompanied by placement of a microdialysis catheter for research purposes. Following baseline measurements, study drug at (magnesium or placebo) will be administered as a bolus of 0.2 mmol/kg followed by 24-hour infusion. Using hemodynamic variables, cerebral perfusion pressure will be monitored. In addition, transcranial doppler velocities and brain interstitial lactate and pyruvate levels will be used to assess effects on cerebral perfusion. Microdialysis will be used to assess brain interstitial levels of ionized magnesium, ionized calcium, excitatory amino acids, and nitric oxide byproducts. In addition blood magnesium and calcium levels (both ionized and total) will be obtained. Multiple validated psychometric measures and MRI evaluation of CNS lesion numbers and location will address Specific Aim 3.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: MAGNESIUM SULFATE FOR NEUROPROTECTION AFTER BRAIN TRAUMA**

  Principal Investigator & Institution: Temkin, Nancy R.; Associate Professor; Neurological Surgery; University of Washington Grant & Contract Services Seattle, Wa 98105

  Timing: Fiscal Year 2002; Project Start 01-JUL-1983; Project End 31-AUG-2005

  Summary: (provided by applicant): Traumatic brain injuries represent an important health problem: they occur with high frequency, the population affected contains many previously healthy young people, and they are associated with high mortality and morbidity. This study continues on our 20 years of experience in conducting clinical trials evaluating treatments for preventing seizures following head injury (Dilantin Prophylaxis of Post-traumatic Seizures. Valproate for Prophylaxis of Post-traumatic Seizures) and in examining neurobehavioral outcome after head injury. The trials and outcome studies found that epileptic seizures, serious cognitive difficulties, high unemployment, and inability to live independently are common among survivors of moderate or severe head injury the ongoing trial tests whether these consequence can be ameliorated by **magnesium sulfate.** Using a randomized, double-blind design, the present study evaluates **magnesium sulfate** as a neuroprotectant and anti-epileptogenic agent following head injury. **Magnesium sulfate** is a widely used, well tolerated compound that has been shown in the laboratory to be effective in reducing seizures and also in limiting neuronal damage and in improving functional outcome following experimental head injury. Specifically, the study will test the hypothesis that **magnesium sulfate,** when given 8 hours of a moderate or severe head injury, a) increases survival b) decreases seizures, and c) improves neurobehavioral functioning. Additionally, the study will: assess the effects of timing of dosage (e.g. <4 hours vs. 4-8 hours), gender, and race; determine the rate of adverse events; and evaluate the time course and correlates of total and ionized magnesium concentrations. Patients with moderate or severe head injury (post-resuscitation Glasgow Coma Scale 3-12 or having an early craniotomy) are randomized to receive moderate doses of **magnesium sulfate** or placebo. Treatment is started as soon as possible, and definitely within 8 hours of injury. The initial bolus of **magnesium sulfate** is followed by a 5 day infusion to keep the magnesium levels elevated during the period when secondary damage from the head injury is most likely. Patients are closely monitored for survival and seizures over the first six months after injury and have a brief neurobehavioral assessment at I and 3 months and a comprehensive neurobehavioral assessment at six months after injury. In summary, this placebo-controlled, randomized double-masked clinical trial will determine the effects of **magnesium sulfate** on survival, post-traumatic seizures, and the patients' functional status and neurobehavioral functioning following traumatic brain injury.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: MAGNESIUM'S ANTIHYPERTENSIVE EFFECTS IN PREECLAMPSIA**

  Principal Investigator & Institution: Standley, Cynthia A.; Physiology; Midwestern University 555 31St St Downers Grove, Il 605151235

  Timing: Fiscal Year 2003; Project Start 15-AUG-2003; Project End 31-AUG-2005

  Summary: (provided by applicant): Preeclampsia consists of hypertension and proteinuria in pregnancy and is the most common cause of maternal mortality if left untreated. Hypertension in preeclampsia is implicated in the constellation of symptoms including seizures, glomerular damage and intrauterine growth retardation. Inhibition

of nitric oxide synthase (NOS) in pregnant rats is an established model of preeclampsia, as it replicates these symptoms. **Magnesium sulfate** is the standard treatment for preeclampsia. However, magnesium's anti-hypertensive effects remain poorly understood. Magnesium acts as a vasodilator, an action customarily attributed to its ability to antagonize calcium entry into vascular smooth muscle cells (VSMC). Emerging evidence suggests that magnesium may also regulate vascular nitric oxide (NO). Therefore, magnesium may mediate vascular relaxation and reduction of blood pressure by activating the vascular NO/cGMP/protein kinase G (PKG) signaling pathway. We hypothesize that magnesium and NO act synergistically at the level of the vasculature to cause vasodilation and a reduction in blood pressure. Specifically, magnesium's ability to reduce blood pressure in the nitric oxide-inhibited animal model of preeclampsia is due to its ability to upregulate vascular NO/cGMP/PKG signaling, effectively reducing total vascular resistance and consequently blood pressure. To test this hypothesis, we will use the NOS inhibitor, NGnitro-L-arginine methyl ester (L-NAME), to induce hypertension in pregnant rats. Then, graded doses of **magnesium sulfate** via chronic infusions in vivo, and acute treatment of vascular tissues ex vivo, will be used to address the following specific aims: 1) Determine if magnesium predictably reduces blood pressure and proteinuria and alters plasma/urinary NOS signaling metabolite levels, and whether these measures can be used therapeutically to predict and track hypertension; 2) Determine magnesium's effects on vascular inducible NOS (iNOS) and endothelial NOS (eNOS) expression; 3) Investigate magnesium's effects on vascular NOS signaling such as NOS activity, NO-mediated guanylate cyclase activity and PKG expression, and 4) Investigate magnesium's ability to regulate vascular reactivity in response to NO-generating stimuli. Data derived from these experiments will elucidate the anti-hypertensive effects of magnesium, its mode of action and the roles of NO and magnesium in preeclampsia and pregnancy-induced hypertension.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: MFMU NETWORK (COLUMBIA UNIV. FACULTY @ SLRH AND CPMC)**

  Principal Investigator & Institution: Miodovnik, Menachem; Obstetrics and Gynecology; Columbia University Health Sciences Po Box 49 New York, Ny 10032

  Timing: Fiscal Year 2002; Project Start 01-APR-2001; Project End 31-MAR-2006

  Summary: The attached application proposes that the Maternal-Fetal Medicine Division of the Columbia University Medical Centers in New York City including St. Luke's-Roosevelt Medical Center (with it's Continuum partnership affiliate Beth Israel Medical Center) and Columbia Presbyterian Hospital Center be selected as a new member for the Cooperative Multicenter Network of Maternal Fetal Units (MFMU). Our hospitals are strategically placed throughout the Metropolitan New York area. They are closely associated with the respective surrounding communities, thus allowing targeted and improved delivery of Health Care, dependable relationships between patients and health care providers, and thereby creating an environment that facilitates patient recruitment to clinical trials. Over 15,000 primary and referral patients who represent a broad spectrum of social, economic, ethnic, racial and cultural backgrounds deliver in our facilities each year of whom more than 30% are high risk. The faculty of the Divisions of Maternal-Fetal Medicine in our institutions represents a team of highly motivated individuals who are enthusiastically approaching the prospect of becoming a new study center for the MFMU network. They are experienced investigators who have been highly successful in recruiting and retaining subjects in clinical trials. The faculty have a record of successful grant applications and contract awards. We are currently

participating as an independent Center in the MFMU BEAM Study (Randomized Clinical Trial of the Beneficial Effects of Magnesium Sulfate) and as an affiliate of Thomas Jefferson University in two additional MFMU studies. The Department of OB/GYN at Columbia University currently ranks second place nationally for funding in Obstetrics and Gynecology by the NIH and is the leading center for the FASTER trial. The faculty of the St Luke's-Roosevelt Hospital Center, Columbia Presbyterian Center, Beth Israel Medical Center and their administrations are unanimous in their eagerness to participate in the MFMU trials and strongly support this grant application.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: MULTICENTER NETWORK OF MATERNAL-FETAL MEDICINE UNITS**

  Principal Investigator & Institution: Malone, Fergal D.; Associate Professor; Obstetrics and Gynecology; Columbia University Health Sciences Po Box 49 New York, Ny 10032

  Timing: Fiscal Year 2003; Project Start 01-APR-2001; Project End 31-MAR-2006

  Summary: The attached application proposes that the Maternal-Fetal Medicine Division of the Columbia University Medical Centers in New York City including St. Luke's-Roosevelt Medical Center (with it's Continuum partnership affiliate Beth Israel Medical Center) and Columbia Presbyterian Hospital Center be selected as a new member for the Cooperative Multicenter Network of Maternal Fetal Units (MFMU). Our hospitals are strategically placed throughout the Metropolitan New York area. They are closely associated with the respective surrounding communities, thus allowing targeted and improved delivery of Health Care, dependable relationships between patients and health care providers, and thereby creating an environment that facilitates patient recruitment to clinical trials. Over 15,000 primary and referral patients who represent a broad spectrum of social, economic, ethnic, racial and cultural backgrounds deliver in our facilities each year of whom more than 30% are high risk. The faculty of the Divisions of Maternal-Fetal Medicine in our institutions represents a team of highly motivated individuals who are enthusiastically approaching the prospect of becoming a new study center for the MFMU network. They are experienced investigators who have been highly successful in recruiting and retaining subjects in clinical trials. The faculty have a record of successful grant applications and contract awards. We are currently participating as an independent Center in the MFMU BEAM Study (Randomized Clinical Trial of the Beneficial Effects of Magnesium Sulfate) and as an affiliate of Thomas Jefferson University in two additional MFMU studies. The Department of OB/GYN at Columbia University currently ranks second place nationally for funding in Obstetrics and Gynecology by the NIH and is the leading center for the FASTER trial. The faculty of the St Luke's-Roosevelt Hospital Center, Columbia Presbyterian Center, Beth Israel Medical Center and their administrations are unanimous in their eagerness to participate in the MFMU trials and strongly support this grant application.

  Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: OBSTETRIC-FETAL PHARMACOLOGY RESEARCH UNITS NETWORK**

  Principal Investigator & Institution: Hankins, Gary D.; Professor and Vice Chairman; Obstetrics and Gynecology; University of Texas Medical Br Galveston 301 University Blvd Galveston, Tx 77555

  Timing: Fiscal Year 2004; Project Start 01-JUL-2004; Project End 30-APR-2009

Summary: (provided by applicant): The University of Texas Medical Branch (UTMB) has the capability to participate actively as a member of the Obstetric-Fetal Pharmacology Research Units (OPRU) Network. Gary Hankins, MD, as PI, is responsible for the proposed clinical trial on the use of hypoglycemic drugs in the treatment of diabetes during pregnancy. He has extensive experience within several NIH multicenter trials, eg, First and Second Trimester Evaluation of Risk of Aneuploidy (FASTER), Beneficial Effects of Antenatal **Magnesium Sulfate** Study (BEAM), and the Vaginal Ultrasound Cerclage Trial. Dr. Hankins has achieved successful patient recruitment and retention by involvement with UTMB's Regional Maternal & Child Health Program (RMCHP). All RMCHP clinics follow protocols established by the Maternal-Fetal Medicine division, headed by Dr. Hankins. Over 12,000 pregnant women are cared for annually within the RMCHP clinic system, approximately 7,000 of whom deliver at UTMB. The Pharmacology/Pharmacokinetics (PK) Co-Investigator, Mahmoud S. Ahmed, PhD, has over 25 years of expertise in utilizing human placenta and derived preparations in his investigations. Dr. Ahmed is a laboratory-pioneered investigator in placental receptors, their natural ligands and mediated responses, as well as the mechanism of hCG release from trophoblast tissue. They investigated the effects of in vitro and in vivo chronic administration of opiates on placental physiology and maternal-neonatal outcome. Utilizing dual perfusion of placental lobule, they demonstrated the influence of efflux protein and placental metabolic [enzymes on the PK for placental transfer of opiates. They identified placental aromatase as a drug-metabolizing enzyme and are investigating its polymorphism. Kenneth D. Carey, DVM, PhD, as Animal Model Co-Investigator, is responsible for coordinating the baboon studies to be conducted at the Southwest National Primate Research Center (SNPRC) in San Antonio. A population of normal and diabetic baboons will be studied. Dr. Hankins is an adjunct investigator at the SNPRC and has had extensive involvement with the Primate research staff. The Department of Ob/Gyn has well-funded scientists with expertise in areas relevant to this RFA including infection, vascular physiology, and placental functions. Clinical PK Co-Investigators Susan Abdel-Rahman, Pharm D., and Wayne Snodgrass, MD, PhD, have over 30 years of combined experience in the development of protocols for PK studies, evaluation of data obtained, and PK/PD modeling. The Division of Neonatology, the GCRC, and other departments at UTMB will provide support for this project.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: QUALITY OF LIFE AND TREATMENT FOR BRAIN TRAUMA**

  Principal Investigator & Institution: Doctor, Jason N.; Rehabilitation Medicine; University of Washington Grant & Contract Services Seattle, Wa 98105

  Timing: Fiscal Year 2002; Project Start 01-SEP-1999; Project End 31-AUG-2004

  Summary: (Adapted from Applicant's Abstract): Health-related quality of life assessment is rapidly becoming an indispensable tool for evaluating outcome in medicine. By addressing the quality of patient health after treatment, these assessments greatly enhance the study of treatment effectiveness, they are used in the study of cost and outcome relationships (i.e., cost-effectiveness analysis), and they offer a universal standard in health measurement for comparison of preventive, rehabilitative, and curative treatments. This Mentored Research Scientist Development Award is proposed by the candidate to prepare him to help lead rehabilitation as it contributes to this integrative approach to the study of outcome in medicine. The proposed 5- year plan of course work, research seminars, and supervised research in health services, epidemiology, and health decision analysis is to provide the candidate with the

necessary skills to function as an independent researcher in the area of rehabilitation and brain trauma cost and outcomes research. An experimental study of health-related quality of life, to be conducted within a recently NIH-funded randomized clinical trial, entitled "Magnesium Sulfate After Brain Trauma", is proposed. This randomized clinical trial of **magnesium sulfate** as a neuroprotectant after brain trauma will enlist 400 subjects and is collecting mortality, seizure frequency, and neurobehavioral data. The proposed study will conduct double-blind interviews with trial participants at 6 months post injury to obtain health-related quality of life data. Interviews will determine subjects' current health status using the EuroQol classification system (EQ-SD). Subjects will then value their current health using three well validated techniques: The Standard Gamble, Time Tradeoff, and Visual Analogue Scale. The primary hypothesis is that **magnesium sulfate,** given within 8 hours of moderate or severe head injury, improves subject valuation of their current health at 6 months post-injury. The study will also evaluate the cognitive burden associated with each method of valuation by testing each subject's consistency in placing values on their current health. Consistent subjects will judge additional hypothetical health states to construct a surrogate weighting scheme for use with subjects for which valuation is of too great a cognitive burden. Finally, the candidate plans to use data collected from the clinical trial on injury severity and cognitive impairment to both study the relationship between cognitive impairment and health-related quality of life judgments, and to develop ways to predict when injury severity will interfere with these judgments.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

- **Project Title: SCOPE AND CAUSES OF STILLBIRTH**

  Principal Investigator & Institution: Saade, George R.; Professor; Obstetrics and Gynecology; University of Texas Medical Br Galveston 301 University Blvd Galveston, Tx 77555

  Timing: Fiscal Year 2003; Project Start 26-SEP-2003; Project End 31-JUL-2008

  Summary: (provided by applicant): The University of Texas Medical Branch at Galveston (UTMB) has the capability to participate actively as a member of the NIH multisite Stillbirth Network. PI George R. Saade, MD, offers extensive experience within several NIH multisite clinical trials og: First and Second Trimester Evaluation of Risk of Aneuploidy (FASTER); First Trimester Nuchal Translucency and the Risk of Congenital Heart Disease; Twin-Twin Transfusion Syndrome Trial; and Beneficial Effects of Antenatal **Magnesium Sulfate** Study (BEAM). We have achieved successful patient recruitment and retention by frequent involvement with UTMB's extensive Regional Maternal & Child Health Program (RMCHP). All of RMCHP's clinics follow protocols established by the Maternal-Fetal Medicine division, and the patients are delivered at UTMB in Galveston. Pregnant women in two counties served by UTMB--Galveston and Brazoria--will constitute the geographic-based population. More than 90% of these patients are cared for at a UTMB clinic and deliver at John Sealy Hospital. If needed, this target population can be expanded to other RMCHP clinics based on zip codes or counties, as appropriate. Further, the Department's Electronic Medical Record captures antepartum and intrapartum information, entered on-line, that is readily available for query by authorized investigators. In like manner, our Department's Tissue Bank has added broad efficiencies to clinical investigation. The excellent and productive collaboration between PI and Co-I, Radec Bukowski, MD, PhD, offers further benefits to the Stillbirth Network. In addition, our Department's genetics counselor, Jennifer Lee, who will serve as our site's outreach worker, brings considerable experience as an established grief counselor. Our Department has a very productive and well-funded

basic science research group with expertise in many areas of relevance to the RFA, such as infection, vascular physiology, placental function, and fetal growth. Finally, we have well-established collaborative ties with our University's Department of Pathology and divisions of Genetics and Neonatology (see letters of support). In particular, UTMB has a highly regarded Perinatal Pathology division with expertise in various areas of interest to this RFA, including neuropathology and placental pathology. Following on our current interest in DNA microarray technology, our proposed study concept is to determine a single nucleotide polymorphism (SNP) marker profile particular to stillbirth. We accept the capitation and participatory stipulations of this RFA and stand ready to become a contributinq member of the NIH Stillbirth Network.

Website: http://crisp.cit.nih.gov/crisp/Crisp_Query.Generate_Screen

E-Journals: PubMed Central[3]

PubMed Central (PMC) is a digital archive of life sciences journal literature developed and managed by the National Center for Biotechnology Information (NCBI) at the U.S. National Library of Medicine (NLM).[4] Access to this growing archive of e-journals is free and unrestricted.[5] To search, go to **http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=Pmc**, and type "magnesium sulfate" (or synonyms) into the search box. This search gives you access to full-text articles. The following is a sample of items found for magnesium sulfate in the PubMed Central database:

- **A Double-Blind Placebo-Controlled Crossover Trial of Intravenous Magnesium Sulfate for Foscarnet-Induced Ionized Hypocalcemia and Hypomagnesemia in Patients with AIDS and Cytomegalovirus Infection.** by Huycke MM, Naguib MT, Stroemmel MM, Blick K, Monti K, Martin-Munley S, Kaufman C.; 2000 Aug; http://www.pubmedcentral.gov/articlerender.fcgi?tool=pmcentrez&artid=90026
- **Concerning the effects of magnesium sulfate on renal function, electrolyte excretion, and clearance of magnesium.** by Heller BI, Hammarsten JF, Stutzman FL.; 1953 Sep; http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=438414
- **Continuous Infusion Indicator Dilution Measurement of Limb Blood Flow and Vascular Response to Magnesium Sulfate in Normotensive and Hypertensive Men.** by Overbeck HW, Daugherty RM Jr, Haddy FJ.; 1969 Oct; http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=322431
- **Effect of sodium sulfate and magnesium sulfate on heteropolysaccharide synthesis in gram-negative soil bacteria.** by Markovitz A, Sylvan S.; 1962 Mar; http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=279300

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[3] Adapted from the National Library of Medicine: **http://www.pubmedcentral.nih.gov/about/intro.html**.

[4] With PubMed Central, NCBI is taking the lead in preservation and maintenance of open access to electronic literature, just as NLM has done for decades with printed biomedical literature. PubMed Central aims to become a world-class library of the digital age.

[5] The value of PubMed Central, in addition to its role as an archive, lies in the availability of data from diverse sources stored in a common format in a single repository. Many journals already have online publishing operations, and there is a growing tendency to publish material online only, to the exclusion of print.

- **Evaluation of sucrose and magnesium sulfate as additives in aerobic blood culture medium.** by Eng J.; 1981 Sep;
  http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=271949
- **Intravenous magnesium sulfate in the treatment of nephritic convulsions in adults.** by Winkler AW, Smith PK, Hoff HE.; 1942 Mar;
  http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=435132
- **Stabilizing Effect of Magnesium Sulfate on Avian Infectious Bronchitis Virus Propagated in Chicken Embryo Kidney Cells.** by Coria MF.; 1972 Feb;
  http://www.pubmedcentral.gov/picrender.fcgi?tool=pmcentrez&action=stream&blobtype=pdf&artid=380330

The National Library of Medicine: PubMed

One of the quickest and most comprehensive ways to find academic studies in both English and other languages is to use PubMed, maintained by the National Library of Medicine.[6] The advantage of PubMed over previously mentioned sources is that it covers a greater number of domestic and foreign references. It is also free to use. If the publisher has a Web site that offers full text of its journals, PubMed will provide links to that site, as well as to sites offering other related data. User registration, a subscription fee, or some other type of fee may be required to access the full text of articles in some journals.

To generate your own bibliography of studies dealing with magnesium sulfate, simply go to the PubMed Web site at **http://www.ncbi.nlm.nih.gov/pubmed**. Type "magnesium sulfate" (or synonyms) into the search box, and click "Go." The following is the type of output you can expect from PubMed for magnesium sulfate (hyperlinks lead to article summaries):

- **A case-control evaluation of treatment efficacy: the example of magnesium sulfate prophylaxis against eclampsia in patients with preeclampsia.**
  Author(s): Abi-Said D, Annegers JF, Combs-Cantrell D, Suki R, Frankowski RF, Willmore LJ.
  Source: Journal of Clinical Epidemiology. 1997 April; 50(4): 419-23.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9179100

- **A comparative study of ketorolac (Toradol) and magnesium sulfate for arrest of preterm labor.**
  Author(s): Schorr SJ, Ascarelli MH, Rust OA, Ross EL, Calfee EL, Perry KG Jr, Morrison JC.
  Source: Southern Medical Journal. 1998 November; 91(11): 1028-32.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9824184

[6] PubMed was developed by the National Center for Biotechnology Information (NCBI) at the National Library of Medicine (NLM) at the National Institutes of Health (NIH). The PubMed database was developed in conjunction with publishers of biomedical literature as a search tool for accessing literature citations and linking to full-text journal articles at Web sites of participating publishers. Publishers that participate in PubMed supply NLM with their citations electronically prior to or at the time of publication.

- **A comparative study with oral nifedipine, intravenous nimodipine, and magnesium sulfate in postoperative analgesia.**
  Author(s): Zarauza R, Saez-Fernandez AN, Iribarren MJ, Carrascosa F, Adame M, Fidalgo I, Monedero P.
  Source: Anesthesia and Analgesia. 2000 October; 91(4): 938-43.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11004053

- **A comparison of magnesium sulfate and indomethacin to magnesium sulfate only for tocolysis in preterm labor with advanced cervical dilation.**
  Author(s): Lewis DF, Grimshaw A, Brooks G, Dunnihoo DR, Otterson WN.
  Source: Southern Medical Journal. 1995 July; 88(7): 737-40.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7597478

- **A comparison of magnesium sulfate and nimodipine for the prevention of eclampsia.**
  Author(s): Belfort MA, Anthony J, Saade GR, Allen JC Jr; Nimodipine Study Group.
  Source: The New England Journal of Medicine. 2003 January 23; 348(4): 304-11.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12540643

- **A comparison of magnesium sulfate and nimodipine for the prevention of eclampsia.**
  Author(s): Hollenberg NK.
  Source: Current Hypertension Reports. 2003 August; 5(4): 288-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12918532

- **A comparison of magnesium sulfate with phenytoin for the prevention of eclampsia.**
  Author(s): Lucas MJ, Leveno KJ, Cunningham FG.
  Source: The New England Journal of Medicine. 1995 July 27; 333(4): 201-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7791836

- **A comparison of phentolamine and magnesium sulfate therapy in pre-eclampsia.**
  Author(s): Dianrong S, Lirong Y, Yinglin L.
  Source: International Journal of Gynaecology and Obstetrics: the Official Organ of the International Federation of Gynaecology and Obstetrics. 2000 March; 68(3): 259-60.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10699198

- **A comparison of serum magnesium sulfate levels in pregnant women with severe preeclampsia between intravenous and intramuscular magnesium sulfate regimens: a randomized controlled trial.**
  Author(s): Manorot M, Tongsong T, Khettglang T.
  Source: J Med Assoc Thai. 1996 February; 79(2): 76-82.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8868017

- **A continuing controversy: magnesium sulfate in the treatment of eclamptic seizures.**
  Author(s): Kaplan PW, Lesser RP, Fisher RS, Repke JT, Hanley DF.
  Source: Archives of Neurology. 1990 September; 47(9): 1031-2. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2204330

- **A double-blind placebo-controlled crossover trial of intravenous magnesium sulfate for foscarnet-induced ionized hypocalcemia and hypomagnesemia in patients with AIDS and cytomegalovirus infection.**
  Author(s): Huycke MM, Naguib MT, Stroemmel MM, Blick K, Monti K, Martin-Munley S, Kaufman C.
  Source: Antimicrobial Agents and Chemotherapy. 2000 August; 44(8): 2143-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10898688

- **A prospective, randomized, controlled trial of high and low maintenance doses of magnesium sulfate for acute tocolysis.**
  Author(s): Terrone DA, Rinehart BK, Kimmel ES, May WL, Larmon JE, Morrison JC.
  Source: American Journal of Obstetrics and Gynecology. 2000 June; 182(6): 1477-82.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10871468

- **A randomized clinical trial of nebulized magnesium sulfate in addition to albuterol in the treatment of acute mild-to-moderate asthma exacerbations in adults.**
  Author(s): Bessmertny O, DiGregorio RV, Cohen H, Becker E, Looney D, Golden J, Kohl L, Johnson T.
  Source: Annals of Emergency Medicine. 2002 June; 39(6): 585-91.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12023699

- **A randomized, double-blind, placebo-controlled pilot trial of intravenous magnesium sulfate in acute stroke.**
  Author(s): Muir KW, Lees KR.
  Source: Annals of the New York Academy of Sciences. 1995 September 15; 765: 315-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7486627

- **A randomized, double-blind, placebo-controlled pilot trial of intravenous magnesium sulfate in acute stroke.**
  Author(s): Muir KW, Lees KR.
  Source: Stroke; a Journal of Cerebral Circulation. 1995 July; 26(7): 1183-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7541572

- **A trial of nebulized magnesium sulfate to reverse bronchospasm in asthmatic patients.**
  Author(s): Chande VT, Skoner DP.
  Source: Annals of Emergency Medicine. 1992 September; 21(9): 1111-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1514723

- **Abnormal QT intervals associated with negative T waves induced by antiarrhythmic drugs are rapidly reduced using magnesium sulfate as an antidote.**
  Author(s): Gurfinkel E, Pazos AA, Mautner B.
  Source: Clin Cardiol. 1993 January; 16(1): 35-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8416758

- **Aborting a prolonged migrainous aura with intravenous prochlorperazine and magnesium sulfate.**
  Author(s): Rozen TD.
  Source: Headache. 2003 September; 43(8): 901-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12940813

- **Accidental epidural magnesium sulfate injection.**
  Author(s): Dror A, Henriksen E.
  Source: Anesthesia and Analgesia. 1987 October; 66(10): 1020-1.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3631562

- **Action of magnesium sulfate in the treatment of preeclampsia-eclampsia.**
  Author(s): Sadeh M.
  Source: Stroke; a Journal of Cerebral Circulation. 1989 September; 20(9): 1273-5. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2672428

- **Acute myocardial infarction without thrombolytic therapy: beneficial effects of magnesium sulfate.**
  Author(s): Shechter M, Hod H, Chouraqui P, Kaplinsky E, Rabinowitz B.
  Source: Herz. 1997 June; 22 Suppl 1: 73-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9259191

- **Acute pancreatitis and primary hyperparathyroidism in pregnancy: treatment of hypercalcemia with magnesium sulfate.**
  Author(s): Rajala B, Abbasi RA, Hutchinson HT, Taylor T.
  Source: Obstetrics and Gynecology. 1987 September; 70(3 Pt 2): 460-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3627603

- **Adjunctive magnesium sulfate infusion does not alter metabolic changes associated with ritodrine tocolysis.**
  Author(s): Ferguson JE 2nd, Holbrook RH Jr, Stevenson DK, Hensleigh PA, Kredentser D.
  Source: American Journal of Obstetrics and Gynecology. 1987 January; 156(1): 103-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3541613

- **Adjusting the loading dose of magnesium sulfate for tocolysis.**
  Author(s): Wright JW, Ridgway LE 3rd, Patterson RM.
  Source: American Journal of Obstetrics and Gynecology. 1990 September; 163(3): 889-92.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1976297

- **Adjustment of magnesium sulfate infusion rate in patients with preterm labor.**
  Author(s): Simchen MJ, Dulitzky M, Mashiach S, Friedman SA, Schiff E.
  Source: American Journal of Obstetrics and Gynecology. 1998 October; 179(4): 994-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9790387

- **Alterations in maternal-fetal Doppler flow velocity waveforms in preterm labor patients undergoing magnesium sulfate tocolysis.**
  Author(s): Keeley MM, Wade RV, Laurent SL, Hamann VD.
  Source: Obstetrics and Gynecology. 1993 February; 81(2): 191-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8423948

- **Alterations in respiratory functions during magnesium sulfate infusion in severe preeclampsia and eclampsia.**
  Author(s): Bilgin T, Cengiz C, Ozan H.
  Source: International Journal of Gynaecology and Obstetrics: the Official Organ of the International Federation of Gynaecology and Obstetrics. 1994 April; 45(1): 59-60.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7913062

- **Alterations in vitamin D and calcium metabolism with magnesium sulfate treatment of preeclampsia.**
  Author(s): Cruikshank DP, Chan GM, Doerrfeld D.
  Source: American Journal of Obstetrics and Gynecology. 1993 April; 168(4): 1170-6; Discussion 1176-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8475963

- **Amniotic cavity accumulation of magnesium with prolonged magnesium sulfate tocolysis.**
  Author(s): Hankins GD, Hammond TL, Yeomans ER.
  Source: J Reprod Med. 1991 June; 36(6): 446-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1865401

- **Anesthesia for one-stage bilateral pheochromocytoma resection in a patient with MEN type IIa: attenuation of hypertensive crisis by magnesium sulfate.**
  Author(s): Niruthisard S, Chatrkaw P, Laornual S, Sunthornyothin S, Prasertsri S.
  Source: J Med Assoc Thai. 2002 January; 85(1): 125-30.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12075713

- **Angiotensin-converting enzyme activity in hypertensive subjects after magnesium sulfate therapy.**
  Author(s): Fuentes A, Goldkrand JW.
  Source: American Journal of Obstetrics and Gynecology. 1987 June; 156(6): 1375-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3035926

- **Antiarrhythmic effect of magnesium sulfate after open heart surgery: effect of blood levels.**
  Author(s): Kiziltepe U, Eyileten ZB, Sirlak M, Tasoz R, Aral A, Eren NT, Uysalel A, Akalin H.
  Source: International Journal of Cardiology. 2003 June; 89(2-3): 153-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12767537

- **Arrhythmia prophylaxis after coronary artery bypass grafting: regimens of magnesium sulfate administration.**
  Author(s): Speziale G, Ruvolo G, Fattouch K, Macrina F, Tonelli E, Donnetti M, Marino B.
  Source: The Thoracic and Cardiovascular Surgeon. 2000 February; 48(1): 22-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10757152

- **Association between the use of antenatal magnesium sulfate in preterm labor and adverse health outcomes in infants.**
  Author(s): Mittendorf R, Dambrosia J, Pryde PG, Lee KS, Gianopoulos JG, Besinger RE, Tomich PG.
  Source: American Journal of Obstetrics and Gynecology. 2002 June; 186(6): 1111-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12066082

- **Association between the use of antenatal magnesium sulfate in preterm labor and adverse health outcomes in infants.**
  Author(s): Usta IM, Nassar AH.
  Source: American Journal of Obstetrics and Gynecology. 2003 August; 189(2): 614-5; Author Reply 615-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14524364

- **Association between use of antenatal magnesium sulfate in preterm labor and adverse health outcomes in infants.**
  Author(s): Mittendorf R, Pryde PG, Lee KS.
  Source: American Journal of Obstetrics and Gynecology. 2003 August; 189(2): 613.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14524362

- **Association between use of antenatal magnesium sulfate in preterm labor and adverse health outcomes in infants.**
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  Source: Pediatric Emergency Care. 1994 August; 10(4): 200-3.
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  Author(s): Mittendorf R, Pryde PG, Roizen N.
  Source: Journal of Perinatal Medicine. 2004; 32(3): 201-10. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15188791

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  Author(s): Savory J, Monif GR.
  Source: American Journal of Obstetrics and Gynecology. 1971 June 15; 110(4): 556-9.
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  Author(s): Kuno N, Ishikawa K.
  Source: International Journal of Gynaecology and Obstetrics: the Official Organ of the International Federation of Gynaecology and Obstetrics. 2002 March; 76(3): 257-66.
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  Author(s): Phuapradit W, Saropala N, Haruvasin S, Thuvasethakul P.
  Source: Asia Oceania J Obstet Gynaecol. 1993 December; 19(4): 387-90.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8135671

- **Serum magnesium levels during magnesium sulfate tocolysis in high-order multiple gestations.**
  Author(s): Elliott JP, Radin TG.
  Source: J Reprod Med. 1995 June; 40(6): 450-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7650659

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  Author(s): Spital A, Greenwell R.
  Source: Southern Medical Journal. 1991 July; 84(7): 919-21.
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  Author(s): Olofsson P, Forsberg B, Marsal K, Sjoberg NO.
  Source: Journal of Perinatal Medicine. 1992; 20(5): 361-4.
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- **Stability of cyclosporine with magnesium sulfate in 5% dextrose injection.**
  Author(s): Nieforth KA, Shea BF, Souney PF, Scavone JM.
  Source: Am J Hosp Pharm. 1993 March; 50(3): 470-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8442464

- **Subtherapeutic doses of magnesium sulfate do not inhibit preterm labor.**
  Author(s): Elliott JP.
  Source: American Journal of Obstetrics and Gynecology. 1992 August; 167(2): 568-9.
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- **Successful magnesium sulfate tocolysis: is "weaning" the drug necessary?**
  Author(s): Lewis DF, Bergstedt S, Edwards MS, Burlison S, Gallaspy JW, Brooks GG, Adair CD.
  Source: American Journal of Obstetrics and Gynecology. 1997 October; 177(4): 742-5.
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  Author(s): Tobey RC, Birnbaum GA, Allegra JR, Horowitz MS, Plosay JJ 3rd.
  Source: Annals of Emergency Medicine. 1992 January; 21(1): 92-6.
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  Author(s): James MF, Cork RC, Dennett JE.
  Source: Anesthesia and Analgesia. 1986 April; 65(4): 373-6.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3513667

- **Suppression of exercise-induced angina by magnesium sulfate in patients with variant angina.**
  Author(s): Knight H.
  Source: Journal of the American College of Cardiology. 1989 March 15; 13(4): 956.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2926047

- **Suppression of exercise-induced angina by magnesium sulfate in patients with variant angina.**
  Author(s): Kugiyama K, Yasue H, Okumura K, Goto K, Minoda K, Miyagi H, Matsuyama K, Kojima A, Koga Y, Takahashi M.
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  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3170960

- **Symptomatic hypocalcemia after tocolytic therapy with magnesium sulfate and nifedipine.**
  Author(s): Koontz SL, Friedman SA, Schwartz ML.
  Source: American Journal of Obstetrics and Gynecology. 2004 June; 190(6): 1773-6. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15284796

- **The adsorption of quinine and quinidine to activated charcoal with and without magnesium sulfate.**
  Author(s): Akintonwa A, Orisakwe OE.
  Source: Vet Hum Toxicol. 1990 December; 32(6): 567-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2264267

- **The effect of intrapartum magnesium sulfate therapy on fetal cardiac troponin I levels at delivery.**
  Author(s): Blackwell SC, Redman ME, Whitty JE, Refuerzo JS, Berry SM, Sorokin Y, Russell E, Cotton DB.
  Source: J Matern Fetal Neonatal Med. 2002 November;12(5):327-31.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=12607765

- **The effect of magnesium sulfate infusion on systemic and renal prostacyclin production.**
  Author(s): O'Brien WF, Williams MC, Benoit R, Sawai SK, Knuppel RA.
  Source: Prostaglandins. 1990 November; 40(5): 529-38.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2255768

- **The effect of magnesium sulfate on bleeding time in pregnancy.**
  Author(s): Fuentes A, Rojas A, Porter KB, Saviello G, O'Brien WF.
  Source: American Journal of Obstetrics and Gynecology. 1995 October; 173(4): 1246-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7485330

- **The effect of magnesium sulfate on fetal heart rate parameters: A randomized, placebo-controlled trial.**
  Author(s): Hallak M, Martinez-Poyer J, Kruger ML, Hassan S, Blackwell SC, Sorokin Y.
  Source: American Journal of Obstetrics and Gynecology. 1999 November; 181(5 Pt 1): 1122-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10561630

- **The effect of magnesium sulfate on maternal and fetal blood flow in pregnancy-induced hypertension.**
  Author(s): Belfort MA, Saade GR, Moise KJ Jr.
  Source: Acta Obstetricia Et Gynecologica Scandinavica. 1993 October; 72(7): 526-30.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8213097

- **The effect of magnesium sulfate on maternal retinal blood flow in preeclampsia: a randomized placebo-controlled study.**
  Author(s): Belfort MA, Saade GR, Moise KJ Jr.
  Source: American Journal of Obstetrics and Gynecology. 1992 December; 167(6): 1548-53.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1471663

- **The effect of magnesium sulfate on the biophysical profile of normal term fetuses.**
  Author(s): Carlan SJ, O'Brien WF.
  Source: Obstetrics and Gynecology. 1991 May; 77(5): 681-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2014079

- **The effect of magnesium sulfate therapy on the duration of labor in women with mild preeclampsia at term: a randomized, double-blind, placebo-controlled trial.**
  Author(s): Witlin AG, Friedman SA, Sibai BM.
  Source: American Journal of Obstetrics and Gynecology. 1997 March; 176(3): 623-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9077617

- **The effect of magnesium sulfate tocolysis on the fetal biophysical profile.**
  Author(s): Peaceman AM, Meyer BA, Thorp JA, Parisi VM, Creasy RK.
  Source: American Journal of Obstetrics and Gynecology. 1989 September; 161(3): 771-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2782360

- **The effect of maternal magnesium sulfate treatment on neonatal morbidity in < or = 1000-gram infants.**
  Author(s): Kimberlin DF, Hauth JC, Goldenberg RL, Bottoms SF, Iams JD, Mercer B, MacPherson C, Thurnau GR.
  Source: American Journal of Perinatology. 1998; 15(11): 635-41.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10064205

- **The effects of administration of lithium salts and magnesium sulfate on the serum anion gap.**
  Author(s): Silverstein FJ, Oster JR, Materson BJ, Lopez RA, Gutierrez R, Ortiz-Interian CJ, Cason LS, Perez GO, Vaamonde CA.
  Source: American Journal of Kidney Diseases : the Official Journal of the National Kidney Foundation. 1989 May; 13(5): 377-81.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2497643

- **The effects of intrapartum magnesium sulfate therapy on fetal serum interleukin-1beta, interleukin-6, and tumor necrosis factor-alpha at delivery: a randomized, placebo-controlled trial.**
  Author(s): Blackwell SC, Hallak M, Hassan SS, Berry SM, Russell E, Sorokin Y.
  Source: American Journal of Obstetrics and Gynecology. 2001 June; 184(7): 1320-3; Discussion 1323-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11408847

- **The effects of maternal magnesium sulfate treatment on newborns: a prospective controlled study.**
  Author(s): Riaz M, Porat R, Brodsky NL, Hurt H.
  Source: Journal of Perinatology : Official Journal of the California Perinatal Association. 1998 November-December; 18(6 Pt 1): 449-54.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9848759

- **The efficacy of terbutaline and magnesium sulfate in the management of preterm labor.**
  Author(s): Surichamorn P.
  Source: J Med Assoc Thai. 2001 January; 84(1): 98-104.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11281506

- **The feasibility of a randomized clinical perinatal trial: maternal magnesium sulfate for the prevention of cerebral palsy.**
  Author(s): Rouse DJ, Hauth JC, Nelson KG, Goldenberg RL.
  Source: American Journal of Obstetrics and Gynecology. 1996 September; 175(3 Pt 1): 701-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8828437

- **The first micturition times of the newborns whose mothers were treated with magnesium sulfate.**
  Author(s): Sahin H, Akay AF, Bircan MK, Gocmen A, Bircan Z.
  Source: International Urology and Nephrology. 2001; 32(4): 651-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11989558

- **The plasma renin-angiotensin system in preeclampsia: effects of magnesium sulfate.**
  Author(s): Sipes SL, Weiner CP, Gellhaus TM, Goodspeed JD.
  Source: Obstetrics and Gynecology. 1989 June; 73(6): 934-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2542856

- **The relation between magnesium sulfate therapy and fetal heart rate variability.**
  Author(s): Atkinson MW, Belfort MA, Saade GR, Moise KJ Jr.
  Source: Obstetrics and Gynecology. 1994 June; 83(6): 967-70.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8190442

- **The risk of pulmonary edema and colloid osmotic pressure changes during magnesium sulfate infusion.**
  Author(s): Yeast JD, Halberstadt C, Meyer BA, Cohen GR, Thorp JA.
  Source: American Journal of Obstetrics and Gynecology. 1993 December; 169(6): 1566-71.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8267063

- **The safety and efficacy of a single dose (500 mg or 1 g) of intravenous magnesium sulfate in neuropathic pain poorly responsive to strong opioid analgesics in patients with cancer.**
  Author(s): Crosby V, Wilcock A, Corcoran R.
  Source: Journal of Pain and Symptom Management. 2000 January; 19(1): 35-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10687324

- **Threatening arrhythmias in acute myocardial infarction are prevented by intravenous magnesium sulfate.**
  Author(s): Ceremuzynski L, Jurgiel R, Kulakowski P, Gebalska J.
  Source: American Heart Journal. 1989 December; 118(6): 1333-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2589170

- **Tocolytic magnesium sulfate exposure and risk of cerebral palsy among children with birth weights less than 1,750 grams.**
  Author(s): Boyle CA, Yeargin-Allsopp M, Schendel DE, Holmgreen P, Oakley GP.
  Source: American Journal of Epidemiology. 2000 July 15; 152(2): 120-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=10909948

- **Tocolytic magnesium sulfate toxicity and unexpected neonatal death.**
  Author(s): Herschel M, Mittendorf R.
  Source: Journal of Perinatology : Official Journal of the California Perinatal Association. 2001 June; 21(4): 261-2.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11533846

- **Tocolytic magnesium sulfate: are the epidemiologic data reassuring?**
  Author(s): Mittendorf R, Pryde P.
  Source: American Journal of Obstetrics and Gynecology. 1998 July; 179(1): 280.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=9704810

- **Torsade de pointes associated with Astemizole overdose treated with magnesium sulfate.**
  Author(s): Hasan RA, Zureikat GY, Nolan BM.
  Source: Pediatric Emergency Care. 1993 February; 9(1): 23-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8488140

- **Transient symptomatic subendocardial ischemia during intravenous magnesium sulfate tocolytic therapy.**
  Author(s): Sherer DM, Cialone PR, Abramowicz JS, Woods JR Jr.
  Source: American Journal of Obstetrics and Gynecology. 1992 January; 166(1 Pt 1): 33-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1733214

- **Treatment of porphyric convulsions with magnesium sulfate.**
  Author(s): Sadeh M, Blatt I, Martonovits G, Karni A, Goldhammer Y.
  Source: Epilepsia. 1991 September-October; 32(5): 712-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1915181

- **Treatment of severe persistent pulmonary hypertension of newborn with magnesium sulfate.**
  Author(s): Krishnan L, Souza NA, Baliga M.
  Source: Indian J Pediatr. 1993 July-August; 60(4): 597-600. No Abstract Available.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8262598

- **Treatment of status asthmaticus with intravenous magnesium sulfate.**
  Author(s): Okayama H, Okayama M, Aikawa T, Sasaki M, Takishima T.
  Source: The Journal of Asthma : Official Journal of the Association for the Care of Asthma. 1991; 28(1): 11-7.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2010425

- **Urinary magnesium, calcium, and phosphate excretion during magnesium sulfate infusion.**
  Author(s): Cruikshank DP, Pitkin RM, Donnelly E, Reynolds WA.
  Source: Obstetrics and Gynecology. 1981 October; 58(4): 430-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7279337

- **Use of magnesium sulfate in alcohol withdrawal.**
  Author(s): Embry CK, Lippmann S.
  Source: American Family Physician. 1987 May; 35(5): 167-70.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3577989

- **Use of magnesium sulfate in asthma in childhood.**
  Author(s): Monem GF, Kissoon N, DeNicola L.
  Source: Pediatric Annals. 1996 March; 25(3): 136, 139-44. Review.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8643324

- **Use of magnesium sulfate in premature labor that fails to respond to beta-mimetic drugs.**
  Author(s): Valenzuela G, Cline S.
  Source: American Journal of Obstetrics and Gynecology. 1982 July 15; 143(6): 718-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6124123

- **Use of magnesium sulfate to treat hyperstimulation in term labor.**
  Author(s): Valenzuela GJ, Foster TC.
  Source: Obstetrics and Gynecology. 1990 May; 75(5): 762-4.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2325961

- **Use of ritodrine, terbutaline, and magnesium sulfate in preterm labor.**
  Author(s): Caritis SN.
  Source: American Journal of Obstetrics and Gynecology. 1986 December; 155(6): 1357.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3789045

- **Usefulness of magnesium sulfate in stabilizing cardiac repolarization in heart failure secondary to ischemic cardiomyopathy.**
  Author(s): Ince C, Schulman SP, Quigley JF, Berger RD, Kolasa M, Ferguson R, Silver B, Haigney MC.
  Source: The American Journal of Cardiology. 2001 August 1; 88(3): 224-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=11472698

- **Vein pretreatment with magnesium sulfate to prevent pain on injection of propofol is not justified.**
  Author(s): Agarwal A, Dhiraj S, Raza M, Pandey R, Pandey CK, Singh PK, Singh U, Gupta D.
  Source: Canadian Journal of Anaesthesia = Journal Canadien D'anesthesie. 2004 February; 51(2): 130-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=14766688

CHAPTER 2. ALTERNATIVE MEDICINE AND MAGNESIUM SULFATE

Overview

In this chapter, we will begin by introducing you to official information sources on complementary and alternative medicine (CAM) relating to magnesium sulfate. At the conclusion of this chapter, we will provide additional sources.

National Center for Complementary and Alternative Medicine

The National Center for Complementary and Alternative Medicine (NCCAM) of the National Institutes of Health (**http://nccam.nih.gov/**) has created a link to the National Library of Medicine's databases to facilitate research for articles that specifically relate to magnesium sulfate and complementary medicine. To search the database, go to the following Web site: **http://www.nlm.nih.gov/nccam/camonpubmed.html**. Select "CAM on PubMed." Enter "magnesium sulfate" (or synonyms) into the search box. Click "Go." The following references provide information on particular aspects of complementary and alternative medicine that are related to magnesium sulfate:

- **1291 cases of cholelithiasis treated with electric shock on otoacupoints.**
  Author(s): Zhang Y, Zhang L, Yang H, Zhang H, Zhu Y.
  Source: J Tradit Chin Med. 1991 June; 11(2): 101-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1861515

- **A brief review of the research on toxemia of pregnancy in Shanghai.**
  Author(s): Wang JH, Zhang ZJ.
  Source: Chinese Medical Journal. 1984 May; 97(5): 361-8.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6439488

- **Absorption of sulfate from orally administered magnesium sulfate in man.**
  Author(s): Morris ME, Levy G.

Source: Journal of Toxicology. Clinical Toxicology. 1983 April; 20(2): 107-14.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=6887305

- **Blunted fetal response to vibroacoustic stimulation associated with maternal intravenous magnesium sulfate therapy.**
  Author(s): Sherer DM.
  Source: American Journal of Perinatology. 1994 November; 11(6): 401-3.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7857429

- **Effects of different concentrations of corn oil, magnesium sulfate, and oat hulls in a porcine ulcerogenic ration.**
  Author(s): Wesoloski GD, Jensen AH, Ladwig VD, Gosser H.
  Source: Am J Vet Res. 1975 June; 36(6): 773-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1170796

- **Effects of enteral and intravenous fluid therapy, magnesium sulfate, and sodium sulfate on colonic contents and feces in horses.**
  Author(s): Lopes MA, White NA 2nd, Donaldson L, Crisman MV, Ward DL.
  Source: Am J Vet Res. 2004 May; 65(5): 695-704.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=15141893

- **Failure of high-dose intravenous magnesium sulfate to control myoclonic status epilepticus.**
  Author(s): Fisher RS, Kaplan PW, Krumholz A, Lesser RP, Rosen SA, Wolff MR.
  Source: Clinical Neuropharmacology. 1988 December; 11(6): 537-44.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=3148367

- **High-dose intravenous magnesium sulfate in the management of life-threatening status asthmaticus.**
  Author(s): Lemesle FG.
  Source: Intensive Care Medicine. 1995 January; 21(1): 94-5.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=7560484

- **High-dose intravenous magnesium sulfate in the management of life-threatening status asthmaticus.**
  Author(s): Sydow M, Crozier TA, Zielmann S, Radke J, Burchardi H.
  Source: Intensive Care Medicine. 1993; 19(8): 467-71.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=8294630

- **High-dose magnesium sulfate attenuates pulmonary oxygen toxicity.**
  Author(s): Flink EB, Dedhia HV, Dinsmore J, Doshi HM, Banks D, Hshieh P.

Source: Critical Care Medicine. 1992 December; 20(12): 1692-8.
http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1458948

- **Magnesium sulfate suppresses electroencephalographic manifestations of CNS oxygen toxicity.**
  Author(s): Katz A, Kerem D, Sherman D.
  Source: Undersea Biomed Res. 1990 January; 17(1): 45-9.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=2316059

- **Myocardial contractile force in the treatment of ouabain intoxication with disodium EDTA, potassium chloride, and magnesium sulfate.**
  Author(s): Cook JR, Pollard JW, Cooley JC.
  Source: The Journal of Laboratory and Clinical Medicine. 1967 February; 69(2): 292-303.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=4959621

- **Resuscitation from prolonged cardiac arrest with high-dose intravenous magnesium sulfate.**
  Author(s): Craddock L, Miller B, Clifton G, Krumbach B, Pluss W.
  Source: The Journal of Emergency Medicine. 1991 November-December; 9(6): 469-76.
  http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=pubmed&dopt=Abstract&list_uids=1787295

Additional Web Resources

A number of additional Web sites offer encyclopedic information covering CAM and related topics. The following is a representative sample:

- Alternative Medicine Foundation, Inc.: **http://www.herbmed.org/**
- AOL: **http://search.aol.com/cat.adp?id=169&layer=&from=subcats**
- Chinese Medicine: **http://www.newcenturynutrition.com/**
- drkoop.com®: **http://www.drkoop.com/InteractiveMedicine/IndexC.html**
- Family Village: **http://www.familyvillage.wisc.edu/med_altn.htm**
- Google: **http://directory.google.com/Top/Health/Alternative/**
- Healthnotes: **http://www.healthnotes.com/**
- MedWebPlus: **http://medwebplus.com/subject/Alternative_and_Complementary_Medicine**
- Open Directory Project: **http://dmoz.org/Health/Alternative/**
- HealthGate: **http://www.tnp.com/**
- WebMD®Health: **http://my.webmd.com/drugs_and_herbs**
- WholeHealthMD.com: **http://www.wholehealthmd.com/reflib/0,1529,00.html**
- Yahoo.com: **http://dir.yahoo.com/Health/Alternative_Medicine/**

The following is a specific Web list relating to magnesium sulfate; please note that any particular subject below may indicate either a therapeutic use, or a contraindication (potential danger), and does not reflect an official recommendation:

- **General Overview**

  Alcohol Withdrawal
  Source: Healthnotes, Inc.; www.healthnotes.com

  Angina
  Source: Healthnotes, Inc.; www.healthnotes.com

  Anxiety
  Source: Healthnotes, Inc.; www.healthnotes.com

  Asthma
  Source: Healthnotes, Inc.; www.healthnotes.com

  Chronic Obstructive Pulmonary Disease
  Source: Healthnotes, Inc.; www.healthnotes.com

  Cluster Headache
  Source: Healthnotes, Inc.; www.healthnotes.com

  Insomnia
  Source: Healthnotes, Inc.; www.healthnotes.com

  Preeclampsia
  Source: Integrative Medicine Communications; www.drkoop.com

  Proctitis
  Source: Integrative Medicine Communications; www.drkoop.com

  Rectal Inflammation
  Source: Integrative Medicine Communications; www.drkoop.com

  Stroke
  Source: Healthnotes, Inc.; www.healthnotes.com

- **Herbs and Supplements**

  Fentanyl
  Source: Healthnotes, Inc.; www.healthnotes.com

  Plantago Psyllium
  Alternative names: Psyllium, Ispaghula; Plantago psyllium/ovata
  Source: Alternative Medicine Foundation, Inc.; www.amfoundation.org

General References

A good place to find general background information on CAM is the National Library of Medicine. It has prepared within the MEDLINEplus system an information topic page dedicated to complementary and alternative medicine. To access this page, go to the MEDLINEplus site at **http://www.nlm.nih.gov/medlineplus/alternativemedicine.html**. This Web site provides a general overview of various topics and can lead to a number of general sources.

CHAPTER 3. PATENTS ON MAGNESIUM SULFATE

Overview

Patents can be physical innovations (e.g. chemicals, pharmaceuticals, medical equipment) or processes (e.g. treatments or diagnostic procedures). The United States Patent and Trademark Office defines a patent as a grant of a property right to the inventor, issued by the Patent and Trademark Office.[7] Patents, therefore, are intellectual property. For the United States, the term of a new patent is 20 years from the date when the patent application was filed. If the inventor wishes to receive economic benefits, it is likely that the invention will become commercially available within 20 years of the initial filing. It is important to understand, therefore, that an inventor's patent does not indicate that a product or service is or will be commercially available. The patent implies only that the inventor has "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States. While this relates to U.S. patents, similar rules govern foreign patents.

In this chapter, we show you how to locate information on patents and their inventors. If you find a patent that is particularly interesting to you, contact the inventor or the assignee for further information. **IMPORTANT NOTE:** When following the search strategy described below, you may discover non-medical patents that use the generic term "magnesium sulfate" (or a synonym) in their titles. To accurately reflect the results that you might find while conducting research on magnesium sulfate, we have not necessarily excluded non-medical patents in this bibliography.

Patents on Magnesium Sulfate

By performing a patent search focusing on magnesium sulfate, you can obtain information such as the title of the invention, the names of the inventor(s), the assignee(s) or the company that owns or controls the patent, a short abstract that summarizes the patent, and a few excerpts from the description of the patent. The abstract of a patent tends to be more technical in nature, while the description is often written for the public. Full patent descriptions contain much more information than is presented here (e.g. claims, references, figures, diagrams, etc.). We will tell you how to obtain this information later in the chapter.

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[7] Adapted from the United States Patent and Trademark Office: **http://www.uspto.gov/web/offices/pac/doc/general/whatis.htm**.

The following is an example of the type of information that you can expect to obtain from a patent search on magnesium sulfate:

- **Biaxial inclination sensor**

  Inventor(s): Ogawa; Hideo (Hachioji, JP), Teraji; Norihisa (Hachioji, JP), Terauchi; Isshu (Nara-ken, JP)

  Assignee(s): Nissho Corporation (Osaka, JP)

  Patent Number: 5,774,996

  Date filed: February 8, 1996

  Abstract: A biaxial inclination sensor including, in the inner bottom of a circular liquid chamber 11 formed in a sensor holder 1 made of an insulating material and having a bottom surface 28 made horizontal, one common electrode 2 made of 18K gold having a low ionization tendency in a central position and vertical with respect to the bottom surface 28 and four outer electrodes 3 made of the same material as the common electrode 2 and passing vertically through the bottom surface 28 at points of intersection of two horizontal orthogonal lines passing through the center and a circle of a predetermined radius about the center and all having the same surface area. An opening in the liquid chamber 11 of the sensor holder 1 is closed off in a liquidproof manner by a glass window plate 4 having a spherical concave portion 9 of a surface roughness less than JIS Rmax 0.25 in its inner surface. A gas bubble 8 and an electrolyte 7 made by mixing pure water as a solvent, **magnesium sulfate** as a solute and anhydrous methanol as a solution in such ratios that the impedance between the electrodes is 10K.OMEGA. are sealed into the sealed liquid chamber 11 in amounts such that the common electrode 2 is always submerged in the electrolyte and does not make contact with the gas bubble 8. The biaxial inclination sensor has a high resolution and reproducibility and stability of detection with which it is possible to secure a high level indication of inclination angle zero by attitude control.

  Excerpt(s): This invention relates to a biaxial inclination sensor comprising a liquid and a gas bubble sealed in a vessel for sensing levelness by detecting the position of the gas bubble by means of electronic signals, the sensor being used in automatic leveling devices of machines and instruments, angle gauges, surveying devices, measuring instruments, airplanes, ships, trains, cars and other things and places where high-precision level indication is required. Conventional biaxial inclination sensors of this kind include (1) those having a sealed concave part serving as a circular liquid chamber which is formed by an electrode mounting plate and a warhead-shaped vessel having an upper inner surface formed into a spherical concave part. In the center of the electrode mounting plate, a common electrode is mounted and, in positions at a predetermined spacing on radial lines about the common electrode, outer electrodes the same height as the common electrode are mounted. These electrodes pass vertically through the electrode mounting plate in a liquidproof, sealed state. An electrolyte and a gas are sealed inside the sealed concave part serving as a circular liquid chamber. These sensors detect inclination in two directions by detecting differences in the submerged height of the electrodes resulting from inclination of the surface of the electrolyte by means of electrical signals. Conventional biaxial inclination sensors also include (2) those wherein the inside of a spherical vessel is filled with substances having different specific gravities and which do not mix with each other and, due to gravity the substance with the lower specific gravity collects vertically upward. A positional relationship of the substances corresponding to the bearing and angle of an inclination of the vessel is

detected by a detecting device disposed outside the vessel. The sensor uses as the different substances a magnetic fluid or a permanent magnet and a non-magnetic substance, or a fluid having a high electrical conductivity and an electrically insulating substance. According to the case, the positional relationship is input into a computing circuit and converted to and outputted as a vessel inclination direction and angle. A detection signal is obtained either by a magnetic detecting device applying a magnetic bias in a fixed direction or by an output signal corresponding to the size of a static capacity (for example Japanese Laid-Open Patent Publication No. H.3-142315). The biaxial inclination sensors (1) described above have the object of inclination angle zero horizontal attitude control, but there has been the problem that these sensors cannot be made highly accurate. The reasons for this inaccuracy includes changes in the vertical position of the liquid surface due to expansion and contraction of the electrolyte caused by changes in the surrounding temperature of the sensor, and changes in the characteristics of the electrolyte caused by temperature changes and instability of the contact surface due to surface tension of the liquid which result in accuracy errors and errors of reproducibility and the liquid surface differences only produce small changes in output.

Web site: http://www.delphion.com/details?pn=US05774996__

- **Blasting process for removing contaminants from substrates and potassium magnesium sulfate-containing blast media**

  Inventor(s): Logan, Jr.; Andrew (Warren, NJ)

  Assignee(s): Church & Dwight Co., Inc. (Princeton, NJ)

  Patent Number: 6,007,639

  Date filed: April 24, 1998

  Abstract: Blast media for removing coatings from sensitive metal and composite surfaces, and a process useful therewith, the blast media contains water-soluble potassium **magnesium sulfate.** The media may also contain flow/anti-caking agents and alkali metal salts.

  Excerpt(s): The present invention relates to a process for removing contaminants from a substrate and to blasting media containing potassium **magnesium sulfate** useful therein. In order to clean a solid surface such that the surface can again be coated such as, for example, to preserve metal against deterioration, or simply to degrease a solid surface, it has become common practice to use an abrasive blasting technique where the abrasive particles are propelled by high pressure fluid against the solid surface in order to dislodge previously applied coatings, scale, dirt, grease or other contaminants. An example of such a surface is the surface of aircraft. Commercial airlines and military agencies spend large sums in periodically stripping or abrading paint and other coatings and contaminants from the exterior surfaces of modern aircraft. These surfaces comprise light weight aluminum or other metal alloys, composites, or plastics, which are relatively soft and from which paint or other coatings must be carefully removed to avoid excessive abrasion or chemical damage. Such damage may, in extreme cases, lead to mechanical failure.

  Web site: http://www.delphion.com/details?pn=US06007639__

- **Carbonate built cleaning composition containing added magnesium**

  Inventor(s): Becker; Joseph G. (Martinsville, NJ), Bolkan; Steven A. (Hopewell, NJ), Carr; Charles D. (Yardley, PA), Falotico; Anthony J. (Doylestown, PA)

  Assignee(s): Church & Dwight Co., Inc. (Princeton, NJ)

  Patent Number: 5,863,877

  Date filed: May 17, 1996

  Abstract: A non-bleaching cleaning composition, e.g. laundry detergent, wherein the solids content comprises at least about 70 wt. % of sodium carbonate, and up to about 12 wt. % of elemental magnesium in the form of a water soluble salt, e.g., **magnesium sulfate** or magnesium chloride, based on the total weight of the solids composition. Preferably the composition also contains an active surfactant and, when used as a laundry detergent, a polymeric polycarboxylate, e.g., an acrylic acid polymer. Incorporation of magnesium ions in the foregoing cleaning composition containing carbonate ions is intended to minimize negative interactions that will occur between the precipitation of calcium carbonate and the substrate being cleaned, e.g., fabric encrustation when the composition is used as a laundry detergent.

  Excerpt(s): This invention relates to novel cleaning compositions having a high sodium carbonate builder content, the use of which results in reduced calcium carbonate precipitation. Cleaning compositions comprising a water-soluble alkaline carbonate are well-known in the art. For example, it is conventional to use such a carbonate as a builder in detergent compositions which supplement and enhance the cleaning effect of an active surfactant present in the composition. Such builders improve the cleaning power of the detergent composition, for instance, by the sequestration or precipitation of hardness causing metal ions such as calcium, peptization of soil agglomerates, reduction of the critical micelle concentration, and neutralization of acid soil, as well as by enhancing various properties of the active detergent, such as its stabilization of solid soil suspensions, solubilization of water-insoluble materials, emulsification of soil particles, and foaming and sudsing characteristics. Other mechanisms by which builders improve the cleaning power of detergent compositions are probably present but are less well understood. Builders are important not only for their effect in improving the cleaning ability of active surfactants in detergent compositions, but also because they allow for a reduction in the amount of the surfactant used in the composition, the surfactant being generally much more costly than the builder. Two important classes of builders have been widely used in recent years, viz., phosphorus containing salts such as sodium tripolyphosphate (STPP) which are very effective in sequestering calcium and magnesium ions without precipitating them, and the water-soluble alkaline carbonates mentioned previously such as sodium carbonate, which may be used in amounts up to 90 wt. % of the composition and which effectively precipitate the calcium ions. However phosphorus-containing builders have been found to cause a serious problem of eutrophication of lakes, rivers and streams when present in detergent compositions in relatively large amounts, resulting in the passage of laws in several states mandating a drastic reduction in their use. While the use of water-soluble alkaline carbonate builders do not cause eutrophication, they result in the unrelated problem of calcium carbonate precipitation, leading to, for example, fabric encrustation due to the deposition of the calcium carbonate on the fiber surfaces of fabrics which in turn causes fabric to have a stiff hand and gives colored fabrics a faded appearance.

  Web site: http://www.delphion.com/details?pn=US05863877__

- **Ceramic color composition and process for producing a curved glass plate**

  Inventor(s): Chiba; Jiro (Fukushima, JP), Ishida; Mineyuki (Fukushima, JP), Manabe; Tsuneo (Kanagawa, JP), Mukai; Kenji (Fukushima, JP), Onoda; Hitoshi (Kanagawa, JP), Shimosaka; Takaji (Chiba, JP), Taguchi; Shuji (Fukushima, JP), Usui; Hiroshi (Kanagawa, JP)

  Assignee(s): Asahi Glass Company Ltd. (Tokyo, JP)

  Patent Number: 6,287,996

  Date filed: September 10, 1999

  Abstract: A ceramic color composition which comprises from 5 to 40 wt % of a heat-resistant color pigment powder, from 50 to 94.5 wt % of a glass powder, from 0 to 25 wt % of a refractory filler, and from 0.1 to 40 wt % of at least one whisker-like refractory filler selected from the group consisting of aluminum borate whiskers,.alpha.-alumina whiskers, potassium titanate whiskers, zinc oxide whiskers, Na.sub.2 Ca.sub.2 P.sub.2 O.sub.18 whiskers, magnesium oxide whiskers, magnesium borate whiskers, basic **magnesium sulfate** (MgSO.sub.4.5MgO.8H.sub.2 O) whiskers and titanium diboride whiskers.

  Excerpt(s): The present invention relates to a ceramic color composition and a process for producing a curved glass plate employing it, useful particularly for a window glass for automobiles. Heretofore, a glass plate with a colored opaque layer for automobiles, obtained by printing a pasted ceramic color composition (ceramic color paste) around the periphery of a window glass for automobiles such as a front windshield glass, a side light glass, a back light glass or a roof glass, by screen printing following by drying, and by heating the glass plate to bake the ceramic color paste on the glass plate, has been widely used. When this pasted ceramic color composition is baked around the periphery of a glass plate, it will form a colored opaque layer. The composition is used to prevent deterioration of a urethane sealant which holds the periphery of the window glass, due to ultraviolet rays, or to prevent the terminals of a heating wire equipped around the periphery of the window glass from being seen from the outside of the car. Further, in recent years, it is used to improve the appearance of the window glass, by forming a graded pattern of fine dots on a glass plate from the periphery toward the center by baking the ceramic color paste thereon.

  Web site: http://www.delphion.com/details?pn=US06287996__

- **Desulfurization process for flue gases**

  Inventor(s): Michiki; Hideyuki (Chiba, JP), Miyakawa; Hisashi (Chiba, JP), Ohsaki; Kozo (Chiba, JP)

  Assignee(s): Toyo Engineering Corporation (Tokyo, JP)

  Patent Number: 6,041,272

  Date filed: June 12, 1998

  Abstract: Formation of calcium sulfite in a desulfurization column for desulfurizing flue gas is prevented by maintaining the pH of the sorption liquid in the column in the range of 5.5-7.0 and the chemical oxygen demand of the sorption liquid below an upper value determined by the concentration of **magnesium sulfate.** The upper value of the chemical oxygen demand of the sorption liquid can be controlled by maintaining the quantity of **magnesium sulfate** in an oxidization vessel arranged downstream of the

desulfurization column. The oxidized liquid discharged from the oxidization vessel is neutralized in a double composition vessel, and the thus-obtained slurry is returned directly to the desulfurization column. By preventing formation of calcium sulfite, high-quality gypsum is formed in the double composition vessel.

Excerpt(s): The invention relates to a desulfurization technology for a variety of flue gases containing sulfur compounds, such as exhaust gases from combustion of heavy oil, coal and the like. As a desulfurization process for various flue gases, it is known to use magnesium components such as magnesium hydroxide and light burned magnesium oxide as a desulfurizing agent. (1) In this process, a flue gas is first brought into contact with an absorbing liquid containing the aforesaid desulfurizing agent in a desulfurization step to cause the liquid to absorb sulfur dioxide, and the resulting absorbing liquid is treated with an oxygen-containing gas to convert magnesium salts contained therein to an aqueous solution of **magnesium sulfate** and sulfuric acid, the aqueous solution being then neutralized with magnesium components. The aqueous solution of **magnesium sulfate** after the neutralization is discharged to the sea as it is. This leads to consumption of magnesium components and sometimes requests consideration of the influence on the environment.

Web site: http://www.delphion.com/details?pn=US06041272__

- **Fugitive rolled substrate material tail tie adhesive and method of use thereof**

  Inventor(s): LaBrash; Robert A. (Roseville, MN)

  Assignee(s): H. B. Fuller Licensing + Financing Inc. (St. Paul, MN)

  Patent Number: 6,342,297

  Date filed: November 5, 1999

  Abstract: The present invention generally relates to a water-based tail tie adhesive for a rolled substrate material and a method of use thereof in the manufacture of rolled substrate material to secure the loose tail end of the roll to the body of the roll. More specifically, the invention is directed to a fugitive tissue and towel tail tie adhesive comprising at least one water soluble cellulose derivative and effective amount of **magnesium sulfate,** and optionally at least one water soluble polyol and at least one functionalized polyol such as polyester polyol, polyether polyol, polyesterether polyol, polyhydroxy compound and combinations thereof. Another aspect of the invention relates to a rolled substrate material comprising a web of substrate material rolled onto a cylindrical core, the tail end of said rolled substrate being secured to the roll by a film of the adhesive composition. The treated rolled substrate material exhibits improved releasability, leaves no stain and reduced bond strength.

  Excerpt(s): In general, the production of a roll of tissue or paper toweling leaves a loose tail end on the roll. This loose tail, if left in this condition can cause jamming of the following production line and final packaging equipment. To enable better production speed, an adhesive is applied, usually as a low solids solution by spray or extrusion methods, to the otherwise loose tail of the roll and rolled up tight to the body of the roll or alternatively applied to the body of the roll after which the tail is rolled into contact with the body of the roll. This type of adhesive is known as a tissue/towel tail tie or tail control adhesive. Consumer preference requires that the bonding of the tail be light enough to be easily pulled loose from the body of the roll without tearing the tissue. A typical tissue/towel tail tie adhesive formulation consists of a solution in water of a water soluble chemically modified form of cellulose derived from a suitable source in a

low solid content. Without additives to decrease the bond strength, this cellulose solution would form an excessively strong bond between the tissue tail and the body of the roll.

Web site: http://www.delphion.com/details?pn=US06342297__

- **Ink-jet recording material**

  Inventor(s): Kondo; Noboru (Tokyo, JP), Onishi; Hiroyuki (Nagano, JP), Ono; Atsushi (Tokyo, JP), Otani; Teiichi (Tokyo, JP), Shibatani; Masaya (Nagano, JP), Sugiyama; Jun (Nagano, JP), Yamagata; Shinya (Nagano, JP)

  Assignee(s): Nippon Paper Industries Co., Ltd. (Tokyo, JP), Seiko Epson Cororaton (Tokyo, JP)

  Patent Number: 6,677,006

  Date filed: July 19, 2001

  Abstract: An ink-jet recording material having on a support at least an ink-receiving layer, with the ink-receiving layer being comprised of a light resistance-imparting layer as a lower layer and a coloration layer as an upper layer. Herein, the light resistance-imparting layer comprises a light-resistance imparting chemical constituted of 1 to 10 parts by weight of a benzotriazole compound as ultraviolet absorbent, 1 to 8 parts by weight of **magnesium sulfate** and 1 to 10 parts by weight of zinc oxide in combination with 100 parts by weight of an ink absorbing pigment, and besides, the coloration layer contains no light resistance-imparting chemicals.

  Excerpt(s): The present invention relates to a recording material for ink-jet printing process. In particular, the invention is concerned with an ink-jet recording material that can ensure very excellent light-resistant properties in images recorded therein and can provide images of excellent coloration quality when ink-jet printing in color is done thereon by the use of not only dye ink but also pigment ink. Ink-jet recording methods can easily achieve full-color recording and reduction of printing noises. In recent years, therefore, the utilization of ink-jet recording methods has been spreading at a rapid rate. According to such a method, fine drops of ink are jetted from nozzles at a high speed so as to direct toward a recording material, and a large quantity of solvent is contained in the ink used. As a result, recording materials for ink-jet recording are required to absorb ink promptly. The recent years have also seen rapid proliferation of personal computers and digital cameras. Under these circumstances, printers as apparatus for outputting such digital image information have come to be required to produce images having qualities on a level similar to those attained by silver salt photography. Thus, it has also become necessary for ink-jet recording materials used in such printers to ensure colors of higher densities, higher resolution and more excellent color reproduction than usual in the images printed thereon.

  Web site: http://www.delphion.com/details?pn=US06677006__

- **Liquid crystal compositions comprising an abrasive and magnesium sulfate heptahydrate**

  Inventor(s): Aszman; Harry (Millstone Township, NJ), Kinscherf; Kevin (Freehold, NJ), Thomas; Barbara (Princeton, NJ)

  Assignee(s): Colgate-Palmolive Co (Piscataway, NJ)

  Patent Number: 6,337,312

  Date filed: May 11, 2001

  Abstract: This invention relates to a liquid crystal composition comprising an ethoxylated nonionic surfactant, an ethoxylated alkyl ether sulfate surfactant, a sulfonate surfactant, a magnesium inorganic salt, an abrasive and water.

  Excerpt(s): This invention relates to a liquid crystal detergent composition. More specifically, it is of a liquid detergent composition in a liquid crystal state which when brought into contact with tough difficult to clean soils is superior to other liquid detergent compositions in detergency and in other physical properties. Liquid aqueous synthetic organic detergent compositions have long been employed for human hair shampoos and as dishwashing detergents for hand washing of dishes (as distinguished from automatic dishwashing machine washing of dishes). Liquid detergent compositions have also been employed as hard surface cleaners, as in pine oil liquids, for cleaning floors and walls. More recently they have proven successful as laundry detergents too, apparently because they are convenient to use, are instantly soluble in wash water, and may be employed in "pre-spotting" applications to facilitate removals of soils and stains from laundry upon subsequent washing. Liquid detergent compositions have comprised anionic, cationic and nonionic surface active agents, builders and adjuvants, including, as adjuvants, lipophilic materials which can act as solvents for lipophilic soils and stains. The various liquid aqueous synthetic organic detergent compositions mentioned serve to emulsify lipophilic materials, including oily soils, in aqueous media, such as wash water, by forming micellar dispersions and emulsions. They also serve to disperse and suspend particulate soils. Although emulsification is a mechanism of soil removal, it has been only comparatively recently that it was discovered how to make microemulsions which are much more effective than ordinary emulsions in removing lipophilic materials from substrates. Such microemulsions are described in British Patent Specification No. 2,190,681 and in U.S. Pat. Nos. 5,075,026; 5,076,954 and 5,082,584 and 5,108,643, most of which relate to acidic microemulsions useful for cleaning hard surfaced items, such as bathtubs and sinks which microemulsions are especially effective in removing soap scum and lime scale from them. However, as in U.S. Pat. No. 4,919,839 the microemulsions may be essentially neutral and such are also taught to be effective for microemulsifying lipophilic soils from substrates. In U.S. patent application Ser. No. 7/313,664 there is described a light duty microemulsion liquid detergent composition which is useful for washing dishes and removing greasy deposits from them in both neat and diluted forms. Such compositions include complexes of anionic and cationic detergents as surface active components of the microemulsions.

  Web site: http://www.delphion.com/details?pn=US06337312__

- **Lower reactivity blends of calcium hypochlorite and magnesium sulfate**

  Inventor(s): Mullins; Richard M. (Cape Coral, FL)

  Assignee(s): Arch Chemicals, Inc. (Norwalk, CT)

  Patent Number: 6,638,446

  Date filed: October 15, 2002

  Abstract: A non-Division 5.1 Oxidizer composition consisting essentially of a blend of hydrated calcium hypochlorite with **magnesium sulfate** heptahydrate, wherein the blend contains at least about 17% by weight of water based on the total weight of the blend.

  Excerpt(s): The present invention relates to a composition having lower reactivity containing selected mixtures of hydrated calcium hypochlorite with **magnesium sulfate** heptahydrate. Hydrated calcium hypochlorite is a strong oxidizer and as such can cause a severe increase in the burning rate of combustible material with which it comes in contact. This oxidation characteristic can cause problems both in the transport and storage of the product. For example, fires involving calcium hypochlorite can be quite vigorous, particularly when combustible material is present, including the product's packaging material itself (e.g., plastic, cardboard). The blends of hydrated calcium hypochlorite and **magnesium sulfate** heptahydrate of the invention are not classified as a "Division 5.1 Oxidizer" (i.e. they do not increase the burning rate of combustible material) as measured by an internationally recognized test standard, i.e., the United Nations Protocol: Transport of Dangerous Goods: Manual of Tests and Criteria, Section 34; Classification Procedures, Test Methods, and Criteria relating to Oxidizing Substances of Division 5.1. Products that are "Division 5.1 Oxidizers" are by definition "dangerous goods" for purposes of transport. The following references have discussed this fire-causing problem and offered solutions to it.

  Web site: http://www.delphion.com/details?pn=US06638446__

- **Method for processing acid effluents**

  Inventor(s): Colombier; Simon (Saint-Germain-les-Corbeil, FR), Langelin; Henri Rene (Caffiers, FR)

  Assignee(s): Lloist Recherche et Developpement S.A. (BE)

  Patent Number: 6,099,814

  Date filed: May 28, 1997

  Abstract: In the method for the humid treatment of effluents containing a compound selected from the group consisting of H.sub.2 SO.sub.4, free SO.sub.2, SO.sub.3.sup.-, or SO.sub.4.sup.= and having a pH lower than 5, the effluents are reacted with a basic compound. Particles selected from the group consisting of CaCO.sub.3.MgCO.sub.3, MgCO.sub.3 and a mixture of these, are used for treating the said effluents, the said particles having a particle size such that at least 95% of the particles selected from the group consisting of CaCO.sub.3.MgCO.sub.3 and MgCO.sub.3 have a particle size smaller than 75.mu.m. After treatment **magnesium sulfate** in the form of a solution or brine is recovered.

  Excerpt(s): The present invention relates to a humid method for the treatment of effluents containing sulfric acid, free SO.sub.2, SO.sub.3.sup.-, or SO.sub.4.sup.=. These effluents come for example from the washing steps of fumes or flue gases by means of

water. These liquid effluents contain sulfuiric acid and consequently may not be discharged in rivers. Until now, these effluents have been treated by means of CaCO.sub.3 or lime, producing gypsum CaSO.sub.4.xH.sub.2 O as by-product, in other words producing mountains of waste material that have to be stocked or spread.

Web site: http://www.delphion.com/details?pn=US06099814__

- **Method for reducing deflagration of azinphos-methyl**

  Inventor(s): Cohoon; Stephen W. (Excelsior Springs, MO), Viets; Alan K. (Excelsior Springs, MO)

  Assignee(s): Bayer Corporation (Pittsburgh, PA)

  Patent Number: 6,103,252

  Date filed: September 25, 1998

  Abstract: The present invention relates to a stable azinphos-methyl wettable powder formulation. The composition of the present invention contains an insecticide powder formulation and a **magnesium sulfate** heptahydrate. The **magnesium sulfate** heptahydrate is added to the azinphos-methyl formulation in an amount such that the **magnesium sulfate** heptahydrate is from about 5% by weight to about 20% by weight of the total mixture. The addition of the **magnesium sulfate** heptahydrate reduces deflagration of the azinphos-methyl formulation and reduces the tendency of exothermic decomposition to occur.

  Excerpt(s): The present invention relates to an azinphos-methyl powder insecticide composition, and a process for preparing the composition, that reduces or eliminates the tendency of the azinphos-methyl composition to deflagrate and undergo exothermic decomposition. Insecticides for open areas are generally applied by spraying. Sprays can be produced by either diluting liquid concentrates or by adding liquid to an insecticide in wettable powder form. The dry powder form of insecticides is generally preferred over the liquid form because it is less likely to penetrate the clothing and skin of the person handling it than a liquid concentrate. It is also easier to clean up a powder than a liquid in the event of a spill. However, azinphos-methyl in powder form is sensitive to heat. An ignition source could result in deflagration of the powder. As such, there is a need to make the powder forms of azinphos-methyl less likely to deflagrate without adversely affecting other desirable properties, such as storage stability. A form of insecticides useful for treating enclosed, limited spaces is a fumigant. Japanese Patent 63,039,803 teaches an insecticide fumigant that undergoes controlled decomposition. In this fumigant, the insecticide is mixed with a thermodecomposable compound that will produce nitrogen and carbon dioxide at temperatures less than 300.degree. C. Among the thermodecomposable compounds taught to be appropriate are ammonium salts, metal azides, inorganic carbonates and organic carboxylic acids. These thermodecomposable compounds are used in quantities such that they constitute at least 50% by weight of the fumigant mixture.

  Web site: http://www.delphion.com/details?pn=US06103252__

- **Micronutrient-containing leaf fertilizer based on magnesium sulfate and process for its production**

  Inventor(s): Wiechens; Bernhard (Kasssel, DE)

  Assignee(s): Kali und Salz GmbH (Kassel, DE)

  Patent Number: 6,383,247

  Date filed: July 2, 1999

  Abstract: A micronutrient-containing leaf fertilizer has **magnesium sulfate** heptahydrate as a carrier material in such an amount that a solid nutrient combination of 13% to 15% by weight MgO, 0% to 3.5% by weight boron, 0% to 6.5% by weight manganese and 10.3% to 14% by weight sulfur is obtained by solely admixing manganese sulfate monohydrate and boric acid with the carrier and this combination being converted into a diluted leaf fertilizer solution by adding water.

  Excerpt(s): The present invention relates to a micronutrient-containing leaf fertilizer which has **magnesium sulfate** heptahydrate as a carrier material in such an amount that a solid nutrient combination of 13% to 15% MgO, 0% to 3.5% boron, 0% to 6.5% manganese and 10.3% to 14% sulphur is obtained by solely admixing manganese sulfate monohydrate and boric acid, said combination being converted into a diluted leaf fertilizer solution by adding water. In addition to the known macronutrients (N, P, K), plant cultures require additional nutrients for their optimal development, in particular the secondary nutrients Mg and S. The secondary nutrients Mg and S are frequently applied as leaf fertilizer in the dissolved form of a bitter salt solution (MgSO.sub.4. 7 H.sub.2 O with 16% MgO and 13% S). In agricultural practice, leaf fertilization with bitter salt is currently viewed as a good trade practice in order to immediately eliminate time-conditioned situations, such as a lack of these nutrients. This is carried out by directly applying to the leaf relatively small amounts of nutrient. Bitter salt is primarily applied to grains, sugar beets, rapeseed and potatoes.

  Web site: http://www.delphion.com/details?pn=US06383247__

- **Modified cement and concrete compositions**

  Inventor(s): Miller; F. MacGregor (Gurnee, IL), Roth; Timothy Jay (Allentown, PA), Welliver; William Russell (Ship Bottom, NJ)

  Assignee(s): Air Products and Chemicals, Inc. (Allentown, PA)

  Patent Number: 5,843,222

  Date filed: September 26, 1997

  Abstract: A cementitious composition comprising 0.1 to about 7.5 percent by weight of a solid residual oxidation product from the combustion of an aqueous emulsion of a naturally occurring asphalt from the Orinoco Belt of Venezuela which contains from about 100 to about 1500 ppm by weight of magnesium in the form of a water soluble magnesium salt, which product from the combustion contains **magnesium sulfate** present in the amount of from about 0.05 to about 4 percent by weight of the cementitious composition and from about 92.5 to about 99.95 percent by weight of a hydraulic silicate cement material.

  Excerpt(s): This invention relates generally to improvement of the engineering properties for hydraulic cements, mortars and/or concretes and, more particularly, to such compositions having incorporated therein one of several property and/or

performance modifying additives. It is well known in the cement/concrete industry that cementitious materials are prepared by combining the sintered-product of the oxides of calcium, silicon, iron and aluminum (commonly abbreviated C, S, F and A, respectively, in the industry) with a calcium sulfate material. Subsequent addition of water to the cement provides a workable material which hardens and gains strength as hydration proceeds to completion. Varying the proportions of the initial oxide and sulfate materials and the process conditions affects the physical properties and performance of the resulting mortar or concrete. More specifically, these properties and subsequent performance are, in large part, determined by the relative amounts of, interaction between and hydration of the sintered oxide products: tricalcium silicate, dicalcium silicate, tricalcium aluminate and tetracalcium aluminoferrite (abbreviated C.sub.3 S, C.sub.2 S, C.sub.3 A and C.sub.4 AF, respectively, in the industry). Generally, C.sub.3 S contributes to early and later compressive strengths, while the contribution of C.sub.2 S is limited to later strengths. C.sub.3 A contributes to early strength, but is sulfate susceptible. While C.sub.4 AF is also sulfate susceptible and adds little to early strength, it does enhance later strength. It is understood that while these four oxides and their products of sintering are those basic to the preparation and function of cementitious materials, other chemical components will also be present depending upon the source and/or identity of the raw materials used. As mentioned above, the sintered product, clinker, is finely ground with an appropriate amount of a calcium sulfate material, usually gypsum. The resulting mixture is a hydraulic cementitious material, of which portland cement is a well-known representative. The principle function of the sulfate material is to control the rate of hydration and set time of the cement. The development of and ultimate strength of any cement/concrete is due, in large part, to hydration of the clinker and the rate of this series of complex chemical reactions.

Web site: http://www.delphion.com/details?pn=US05843222__

- **Process for producing ultrafine particles of colloidal calcium carbonate**

  Inventor(s): You; Kyu Jae (48, Nackdong-ri, Nam-myon, Jungsun-kun, Kangwon-do, KR)

  Assignee(s): none reported

  Patent Number: 5,750,086

  Date filed: January 31, 1997

  Abstract: A process for producing ultrafine particles of colloidal calcium carbonate which comprises the steps of adding **magnesium sulfate** into an aqueous suspension of calcium hydroxide, carbonating the aqueous suspension by introducing carbon dioxide into the aqueous suspension, and adding zinc sulfate alone or together with sulfuric acid into the aqueous suspension simultaneously with the carbonation step. Ultrafine particles of colloidal calcium carbonate in a chain-structured configuration which have an average diameter of 0.01.mu.m or smaller, an average length of 0.05.mu.m or longer, and a BET surface area of 70 m.sup.2 /g or greater are produced.

  Excerpt(s): The present invention relates to a process for the production of calcium carbonate, and in particular, to a process for the production of ultrafine particles of colloidal calcium carbonate. The demand for synthetic calcium carbonate powders is rapidly growing in recent years in various fields of industry including paper making, processing of rubbers and plastics, and preparation of inks, paints, sealants and other useful products. Synthetic calcium carbonate powders have the excellent whiteness as a pigment and impart mechanical strengths and abrasion resistance when added as a filler

to the above end products. Synthetic calcium carbonate particles are usually prepared by introducing carbon dioxide into an aqueous suspension of calcium hydroxide (known as "milk of lime") to effect the reaction of calcium hydroxide and carbon dioxide precipitating calcium carbonate in a particulate form. The configuration of the calcium carbonate particles obtained in such a method of carbonation of a milk of lime is usually spindle-like, cube-like or needle-like. Calcium carbonate particles having various shapes and sizes may be obtained by changing the reaction conditions such as the concentration of the calcium hydroxide suspension, reaction temperature, manner of reaction, and use or non-use of an additive.

Web site: http://www.delphion.com/details?pn=US05750086__

- **Salt flavor enhancing compositions, food products including such compositions, and methods for preparing such products**

  Inventor(s): Bonorden; William R. (Moorestown, NJ), Giordano; Denise A. (Jackson, NJ), Lee; Beverly L. (Marlton, NJ), Lukis; Harry M. (Collingswood, NJ)

  Assignee(s): Campbell Soup Company (Camden, NJ)

  Patent Number: 5,871,803

  Date filed: May 30, 1997

  Abstract: A salt flavor enhancing composition consists essentially of a combination of sodium chloride and potassium chloride and a combination of magnesium chloride and **magnesium sulfate** Further, the composition may include a combination of sodium ions, chloride ions, potassium ions, magnesium ions, and sulfate ions. Food products including these compositions and methods for preparing such food products are encompassed.

  Excerpt(s): The present invention relates to salt flavor enhancing compositions, food products including such compositions, and methods for manufacturing such products. In particular, it relates to salt flavor enhancing compositions, which include sodium chloride (NaCl), i.e., salt, in combination with potassium chloride and at least two magnesium salts, such that the total amount of sodium is reduced without significant degradation of salt flavor. Further, it relates to salt flavor enhancing compositions, which include potassium chloride and at least two magnesium salts, that may be added to products having intrinsic sodium levels or targeted sodium levels. Salt or table salt, as those terms have generally been used, is added to processed and cooked foods to provide palatability and a desirable salty taste. It chemically consists of approximately 60% elemental chlorine and approximately 40% elemental sodium, by weight. Sodium, an essential nutrient, plays a vital role in maintaining concentration and volume of extracellular fluid. From a dietary perspective, the blood pressure of a specific individual may respond differently to various levels of sodium. Family history of blood pressure, weight, age, physical activity, alcohol intake, and overall dietary factors, such as dietary intake of calcium, potassium, sodium, and fiber all play a role in affecting blood pressure. Some scientific evidence suggests that a more balanced dietary intake of sodium, potassium, magnesium, and other cations may beneficially affect blood pressure. Individuals, whose blood pressure increases when sodium intake is high or decreases when sodium intake is low, are called "salt sensitive." For those salt sensitive individuals, a reduction in total dietary sodium in take may be warranted. This may be accomplished through the use of low and reduced sodium compositions and food products.

Web site: http://www.delphion.com/details?pn=US05871803__

- **Soluble magnesium hydroxide**

  Inventor(s): Overton; James M. (1127 Nickel La., Yuba City, CA 95911), Wurzburger; Stephen R. (P.O. Box C, Goodyear Bar, CA 95944)

  Assignee(s): none reported

  Patent Number: 5,891,320

  Date filed: August 26, 1996

  Abstract: A clear solution and a method for preparing the solution which has a pH in the range of from 10 to 13.9 and containing sulfate ions in a concentration range less than 500 parts per million. The solution is prepared by mixing two solutions in which one solution has one equivalent of **magnesium sulfate** and an equivalent of sulfuric acid and the second solution has an equivalent of Ca (OH).sub.2 and two equivalents of K.sub.2 OH. It is believed that CaSO.sub.4 precipitates in the mixed solution and causes coprecipitation of potassium, perhaps as double salt with the Ca leaving OH stabilized by hydration and magnesium ions.

  Excerpt(s): This invention relates to methods of making aqueous magnesium hydroxide solutions and particularly to a solution that is clear of the magnesia sludge that characterizes typical industrial aqueous magnesia solutons. Standard magnesium hyroxide is manufactured by crushing an ore containing magnesium carbonate and calcium carbonate and putting the ore through a kiln in order to drive off CO.sub.2 leaving magnesium oxide (MgO) and calcium oxide (CaO). Numerous chemical processes include steps that require strong base solutions with a high pH. Such processes include, for example, paint stripping operations where it is desirable to loosen and remove an old coating on a steel or cast iron surface down to the bare metal in order to repaint or replate the metal surface. Another group of processes relates to the cleaning of an aluminum surface in which it is required to remove aluminum oxide scale as an initial step in the typical anodizing or alodining process. Extreme care must sometimes be taken in these preliminary steps to prevent etching of the base metal (aluminum) that can damage the metal part.

  Web site: http://www.delphion.com/details?pn=US05891320__

- **Therapeutic bath salts and method of use**

  Inventor(s): McLean; Linsey (4267 S. State Rd., Davison, MI 48423)

  Assignee(s): none reported

  Patent Number: 5,958,462

  Date filed: May 23, 1997

  Abstract: Therapeutic bath salts for the relaxation of muscles, elimination or reduction of muscle spasms, and for the overall enhancement of a person's mood. The bath salts of the present invention are used as aromatherapy that has both the convenience of a bath and the internal mechanisms of ingested medication. The formula for the composition of the present invention includes a selected amount of **magnesium sulfate** trihydrate (a hydrated version of epsom salts), lithium chloride, copper gluconate, and essential oils. The oils include rosewood oil, ylang ylang oil, lavender oil and patchouli oil. The oils

are provided as scents for use in the prescribed aromatherapy. The user mixes a preselected amount of the crystallized salt or liquid form of the present invention with the bath water. A period of time is allowed to elapse before the user departs the bath. By resting in the tub, the user accrues the combined benefits of external therapy and internal therapy.

Excerpt(s): The present invention relates generally to therapeutic bath salts. More particularly, the present invention relates to a composition that includes a magnesium salt, a lithium salt, a copper salt, a carbonate, and, in its preferred form, one or more essential oils. Bath and bathing therapies have been known for centuries. As early as the times of ancient Egypt, wealthy families availed themselves of "scented and anointed waters" to allegedly alleviate a virtual panoply of diseases, from minor muscular discomfort to life-threatening disease. The Romans were well known for their baths which provided both therapeutic treatment and social interaction. The ancient ruins of baths generally are found by hot springs and mineral springs, such as by the ancient city of Carcalla. The user could select from cold, warm or hot springs, and could take advantage of the high mineral content of many of these waters. Modern versions of hot springs may be found, for example, at Hot Springs, Ark.

Web site: http://www.delphion.com/details?pn=US05958462__

Patent Applications on Magnesium Sulfate

As of December 2000, U.S. patent applications are open to public viewing.[8] Applications are patent requests which have yet to be granted. (The process to achieve a patent can take several years.) The following patent applications have been filed since December 2000 relating to magnesium sulfate:

- **Alcohol sweetened and sparkling fruit ciders and method for same**

  Inventor(s): Young, Thomas B. III; (US)

  Correspondence: Galgano & Burke; 300 Rabro Drive; 300 Rabro Drive; Suite 135; Hauppauge; NY; 11788; US

  Patent Application Number: 20020172738

  Date filed: April 12, 2000

  Abstract: An alcoholic, sparkling, sweetened fruit cider with Ethanol content in the range 3.5% to 7.5% made by:selecting a fruit juice or puree to form the desired flavor base of the beverage from a group comprising orange juice, grapefruit juice, pineapple juice, cherry juice, tomato juice, blueberry juice or puree, cranberry juice or puree, blackberry juice or puree, apricot juice or puree, prune juice, guava juice or puree, raspberry juice or puree, peach juice, lemon juice, lime juice, strawberry juice or puree, and kiwi fruit juice or puree, adding yeast and a nutrient mineral salts mixture as set forth in TABLE I below: 1 TABLE I gms per 100 gms Ammonium chloride 61 Yeast extract 3 Potassium phosphate 20 **Magnesium sulfate** heptahydrate 14 Thiamine hydrochloride 2adding sugar derived from corn, cane, beet or barley malt as required to establish an initial sugar level in the 8 to 14% w/v range, fermenting the mixture and clarifying the resulting broth, adding a sweetener to the broth selected from the group

[8] This has been a common practice outside the United States prior to December 2000.

comprising corn sugar, sucrose, sorbose stabilizer, and a low calorie sweetener, carbonating the beverage, bottling and cold storing the same.

Excerpt(s): This application claims benefit under Title 35, USC.sctn.119(e) of U.S. Provisional Application Serial No. 60/153,499. This invention relates to midrange alcoholic fruit ciders made from fruit juices and purees including orange juice, grapefruit juice, pineapple juice, cherry juice, blueberry juice or puree, cranberry juice or puree, blackberry juice or puree, apricot juice or puree, prune juice, guava juice or puree, raspberry juice or puree, peach juice, lemon juice, lime juice, strawberry juice or puree, kiwi fruit juice or puree, and tomato juice and to a method for making same. Some fruit juices ferment naturally and have been used for many years to make alcoholic beverages, notably grape juice for making wine and apple juice for making hard (alcoholic) cider. More recently numerous fruit juices and fruits have been used for making high range alcoholic wines of 11 to 14% ethanol. Among these are blueberries, oranges and orange juice (U.S. Pat. No. 3,979,521, JP 60,30674, JP 60,30674, JP 62,248801, JP 55,127983, JP 64,055174, JP 6,205664, JP 54,73199, JP 57,144967, JP 3,266948, JP 1,179647, JP 60,043376, JP 62,294024, DE 2,357,970 and FR 2,657,878), apples and apple juice, and other fruits like guava. In these products enough sugar is added to obtain either dry or sweet mostly non-sparkling wines similar in alcoholic content to wines made from grape juice (11 to 14%).

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Basic magnesium sulfate fiber-reinforced polypropylene resin composition and injection molded article using the resin composition**

  Inventor(s): Ohkawa, Kenichi; (Ichihara-shi, JP), Shimojo, Moriyasu; (Ichihara-shi, JP), Takashima, Isao; (Ibaraki-shi, JP)

  Correspondence: Sughrue Mion, Pllc; 2100 Pennsylvania Avenue, NW; Washington; DC; 20037-3213; US

  Patent Application Number: 20030060553

  Date filed: August 30, 2002

  Abstract: Disclosed is a polypropylene resin composition comprising (A) from 40 to 98% by weight of polypropylene resin, (B) from 1 to 30% by weight of basic **magnesium sulfate** fiber having a surface treated with montan wax wherein fibers contained in primary fibers have an average fiber length of from 7 to 10.mu.m and the percentage of primary fibers containing fibers having a fiber length of 20.mu.m or more is 10% by weight or less and (C) from 1 to 30% by weight of talc, provided that the total weight of the components (A), (B) and (C) is adjusted to 100% by weight.

  Excerpt(s): The present invention relates to a polypropylene resin composition and to an injection molded article obtained by use of the resin composition. In particular, the present invention relates to a polypropylene resin composition excellent in rigidity and impact strength, particularly in impact strength at low temperature, and to an injection molded article obtained by use of the resin composition. Polypropylene resins are widely employed for molded articles, etc. due to their excellent mechanical properties and processabilities. In particular, they are used in automotive materials that are required to have excellent impact strength, rigidity and thermal properties such as thermal distortion temperature. Heretofore known are blending an ethylene-.alpha.-olefin random copolymer or a vinyl aromatic compound to a polypropylene resin in order to improve the impact strength of polypropylene resins, and blending a filler such

as talc to a polypropylene resin in order to improve the impact strength or thermal properties such as thermal distortion temperature.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Compression molded product of quick-dissolving chlorinated isocyanuric acid**

  Inventor(s): Iwasaki, Yoshiya; (Tokushima, JP), Morioka, Shigeru; (Tokushima, JP), Seo, Yasufumi; (Tokushima, JP)

  Correspondence: Sughrue Mion, Pllc; 2100 Pennsylvania Avenue, N.W.; Suite 800; Washington; DC; 20037; US

  Patent Application Number: 20040051079

  Date filed: September 9, 2003

  Abstract: A compression molded product of quick-dissolving chlorinated isocyanuric acid, comprising:(a) trichloroisocyanuric acid,(b) sodium dichloroisocyanurate anhydrous salt,(c) **magnesium sulfate** and/or aluminum sulfate, and(d) calcium carbonate.

  Excerpt(s): The present invention relates to a chlorinated isocyanuric acid molded product having a quick-dissolving property, specifically, to a chlorinated isocyanuric acid molded product capable of quickly dissolving through expansion and disintegration in water when immersed in water and providing a high concentration of active chlorine. The molded product is most suitable for superchlorination in a swimming pool and even besides the swimming pool, is suitably used in any place where a high concentration of active chlorine is required. Chlorinated isocyanuric acids are chemically stable solid compounds and are easy to handle. When dissolved in water, they are hydrolyzed to release active chlorine having a bactericidal activity. Since the active chlorine is excellent in stability and the bactericidal performance persists over a long period of time, the compounds are widely used as a bactericidal disinfectant for pool water, sewage water, and effluent from a human-waste treatment plant and as an algicide or an algae-proofing agent for cooling water of machinery and equipment.

  Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Inkjet recording material**

  Inventor(s): Kondo, Noboru; (Tokyo, JP), Onishi, Hiroyuki; (Nagano, JP), Ono, Atsushi; (Tokyo, JP), Otani, Teiichi; (Tokyo, JP), Shibatani, Masaya; (Nagano, JP), Sugiyama, Jun; (Nagano, JP), Yamagata, Shinya; (Nagano, JP)

  Correspondence: Millen, White, Zelano & Branigan, P.C.; 2200 Clarendon BLVD.; Suite 1400; Arlington; VA; 22201; US

  Patent Application Number: 20020034615

  Date filed: July 19, 2001

  Abstract: An ink-jet recording material having on a support at least an ink-receiving layer, with the ink-receiving layer being comprised of a light resistance-imparting layer as a lower layer and a coloration layer as an upper layer. Herein, the light resistance-imparting layer comprises a light-resistance imparting chemical constituted of 1 to 10 parts by weight of a benzotriazole compound as ultraviolet absorbent, 1 to 8 parts by weight of **magnesium sulfate** and 1 to 10 parts by weight of zinc oxide in combination

with 100 parts by weight of an ink absorbing pigment, and besides, the coloration layer contains no light resistance-imparting chemicals.

Excerpt(s): The present invention relates to a recording material for ink-jet printing process. In particular, the invention is concerned with an ink-jet recording material that can ensure very excellent light-resistant properties in images recorded therein and can provide images of excellent coloration quality when ink-jet printing in color is done thereon by the use of not only dye ink but also pigment ink. Ink-jet recording methods can easily achieve full-color recording and reduction of printing noises. In recent years, therefore, the utilization of ink-jet recording methods has been spreading at a rapid rate. According to such a method, fine drops of ink are jetted from nozzles at a high speed so as to direct toward a recording material, and a large quantity of solvent is contained in the ink used. As a result, recording materials for ink-jet recording are required to absorb ink promptly. The recent years have also seen rapid proliferation of personal computers and digital cameras. Under these circumstances, printers as apparatus for outputting such digital image information have come to be required to produce images having qualities on a level similar to those attained by silver salt photography. Thus, it has also become necessary for ink-jet recording materials used in such printers to ensure colors of higher densities, higher resolution and more excellent color reproduction than usual in the images printed thereon.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Process for working up emulsion polymers**

Inventor(s): Eichenauer, Herbert; (Dormagen, DE), Moss, Stefan; (Haan, DE)

Correspondence: Bayer Corporation; Patent Department; 100 Bayer Road; Pittsburgh; PA; 15205; US

Patent Application Number: 20020111397

Date filed: December 14, 2001

Abstract: A process for working up polymer components prepared by emulsion polymerization is disclosed. The process is characterized in that coagulation of the aqueous polymer latex present after emulsion polymerization is performed using a combination of A) an aqueous solution of at least one salt selected from the group consisting of sodium chloride, calcium chloride, magnesium chloride, aluminum chloride, sodium sulfate, **magnesium sulfate** and aluminum sulfate ,B) an aqueous solution of at least one salt of an acid selected from the group consisting of hypophosphorous acid (H.sub.3PO.sub.2), phosphorous acid (H.sub.3PO.sub.3 or HPO2) and ascorbic acid and optionally C) an aqueous dilute acid selected from the group consisting of sulfuric acid, phosphoric acid and acetic acid.

Excerpt(s): The invention relates to emulsion polymerization process and more particularly to the coagulation of latex particles. A process for working up polymer components prepared by emulsion polymerization is disclosed. The process is characterized in that coagulation of the aqueous polymer latex present after emulsion polymerization is performed using a combination of: A) an aqueous solution of at least one salt selected from the group consisting of sodium chloride, calcium chloride, magnesium chloride, aluminum chloride, sodium sulfate, **magnesium sulfate** and aluminum sulfate; B) an aqueous solution of at least one salt of an acid selected from the group consisting of hypophosphorous acid (H.sub.3PO.sub.2), phosphorous acid (H.sub.3PO.sub.3 or HPO.sub.2) and ascorbic acid; and, optionally, C) an aqueous dilute

acid selected from the group consisting of sulfuric acid, phosphoric acid and acetic acid. The invention provides a process for working up polymeric material systems prepared by emulsion polymerization, wherein working up of the corresponding latices is performed using a special salt mixture.

Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

- **Treatment of electric arc furnace dust to resist acid and alkaline leaching of heavy metals**

  Inventor(s): Smith, Charles L.; (Conshohocken, PA)

  Correspondence: Christopher R. Lewis; Ratner& Prestia; One Westlakes, Berwyn, Suite 301; P.O. Box 980; Valley Forge; PA; 19482-0980; US

  Patent Application Number: 20030023128

  Date filed: May 4, 2001

  Abstract: A supplemental agent for a hazardous waste composition containing electric arc furnace dust (EAFD) includes potassium **magnesium sulfate** or a magnesium salt such as **magnesium sulfate** or magnesium chloride. The supplemental agent when mixed with EAFD and water, along with lime either lime inherent within the EAFD or added lime, reduces the leaching of heavy metals from the waste composition over a wide range of leaching conditions, including both acidic, neutral, and alkaline environments. The method for reducing the concentration of heavy metals in a leachate from the EAFD involves forming a mixture of EAFD, water, the supplemental agent, and, optionally, ferrous sulfate, along with lime, then permitting the mixture to react.

  Excerpt(s): The present invention pertains to the stabilization of electric arc furnace dust (EAFD) and, more specifically, the reduction of leaching of heavy metals from EAFD in both acidic and alkaline environments. The electric arc furnace process is a common steel making practice in use for many years. In a typical electric arc furnace process, solid charge ingredients including raw scrap, lime, burnt lime, iron ore and ferro-alloy additives are placed in a top-charge furnace unit. A conventional furnace unit is equipped with (1) a roof lift and swing arrangement which permits the roof to swing aside when cold scrap is charged into the furnace, (2) a rocker and rail tilting type arrangement which permits the furnace to tilt forward for tapping and backward for slagging, (3) a system for additions through the furnace roof, and (4) evacuation systems for the removal of dust generated during the steel making cycle.

  Web site: http://appft1.uspto.gov/netahtml/PTO/search-bool.html

Keeping Current

In order to stay informed about patents and patent applications dealing with magnesium sulfate, you can access the U.S. Patent Office archive via the Internet at the following Web address: **http://www.uspto.gov/patft/index.html**. You will see two broad options: (1) Issued Patent, and (2) Published Applications. To see a list of issued patents, perform the following steps: Under "Issued Patents," click "Quick Search." Then, type "magnesium sulfate" (or synonyms) into the "Term 1" box. After clicking on the search button, scroll down to see the various patents which have been granted to date on magnesium sulfate.

You can also use this procedure to view pending patent applications concerning magnesium sulfate. Simply go back to **http://www.uspto.gov/patft/index.html**. Select "Quick Search" under "Published Applications." Then proceed with the steps listed above.

CHAPTER 4. BOOKS ON MAGNESIUM SULFATE

Overview

This chapter provides bibliographic book references relating to magnesium sulfate. In addition to online booksellers such as **www.amazon.com** and **www.bn.com**, excellent sources for book titles on magnesium sulfate include the Combined Health Information Database and the National Library of Medicine. Your local medical library also may have these titles available for loan.

Chapters on Magnesium Sulfate

In order to find chapters that specifically relate to magnesium sulfate, an excellent source of abstracts is the Combined Health Information Database. You will need to limit your search to book chapters and magnesium sulfate using the "Detailed Search" option. Go to the following hyperlink: **http://chid.nih.gov/detail/detail.html**. To find book chapters, use the drop boxes at the bottom of the search page where "You may refine your search by." Select the dates and language you prefer, and the format option "Book Chapter." Type "magnesium sulfate" (or synonyms) into the "For these words:" box. The following is a typical result when searching for book chapters on magnesium sulfate:

- **Electrolytes and Replacement Solutions**

  Source: in Moreau, D., ed. Nursing96 Drug Handbook. Springhouse, PA: Nursing96 Books. Springhouse Corporation. 1996. p. 823-836.

  Contact: Available from Springhouse Publishing. 1111 Bethlehem Pike, P.O. Box 908, Springhouse, PA 19477. (800) 331-3170 or (215) 646-4670 or (215) 646-4671. Fax (215) 646-8716. PRICE: $29.95. ISBN: 087434817X. ISSN: 0273320X.

  Summary: This chapter on electrolytes and replacement solutions is from a nursing handbook on pharmaceuticals; the handbook focuses on the clinical aspects of drug therapy. The chapter begins with an alphabetically arranged list of the generic names of drugs described in the chapter, followed by an alphabetized list of its brand names and a list of selected combination products in which these drugs are found. Specific information on each drug is arranged under the following headings: How Supplied, Action, Onset, Peak, Duration, Indications and Dosage, Adverse Reactions, Interactions,

Contraindications, and Nursing Considerations. Drugs covered are calcium acetate, calcium carbonate, calcium chloride, calcium citrate, calcium glubionate, calcium gluceptate, calcium gluconate, calcium lactate, calcium phosphate, dextran, hetastarch, magnesium chloride, **magnesium sulfate,** potassium acetate, potassium bicarbonate, potassium chloride, potassium gluconate, Ringer's inject, and sodium chloride.

- **Laxatives**

  Source: in Moreau, D., ed. Nursing96 Drug Handbook. Springhouse, PA: Nursing96 Books. Springhouse Corporation. 1996. p. 641-656.

  Contact: Available from Springhouse Publishing. 1111 Bethlehem Pike, P.O. Box 908, Springhouse, PA 19477. (800) 331-3170 or (215) 646-4670 or (215) 646-4671. Fax (215) 646-8716. PRICE: $29.95. ISBN: 087434817X. ISSN: 0273320X.

  Summary: This chapter on laxatives is from a nursing handbook on pharmaceuticals. The handbook is designed to provide drug information that focuses on what nurses need to know by emphasizing the clinical aspects of drug therapy. The chapter begins with an alphabetical list of the generic names of drugs described in the chapter, followed by an alphabetized list of its brand names. Finally comes a list of selected combination products in which these drugs are found. Specific information on each drug is arranged under the following headings: How Supplied, Action, Onset, Peak, Duration, Indications and Dosage, Adverse Reactions, Interactions, Contraindications, and Nursing Considerations. Drugs covered are bisacodyl, calcium polycarbophil, cascara sagrada, castor oil, docusate calcium, docusate potassium, docusate sodium, glycerin, lactulose, magnesium citrate, magnesium hydroxide, **magnesium sulfate,** methylcellulose, mineral oil, phenolphthalein, polyethylene glycol and electrolyte solution, psyllium, senna, and sodium phosphates.

CHAPTER 5. PERIODICALS AND NEWS ON MAGNESIUM SULFATE

Overview

In this chapter, we suggest a number of news sources and present various periodicals that cover magnesium sulfate.

News Services and Press Releases

One of the simplest ways of tracking press releases on magnesium sulfate is to search the news wires. In the following sample of sources, we will briefly describe how to access each service. These services only post recent news intended for public viewing.

PR Newswire

To access the PR Newswire archive, simply go to **http://www.prnewswire.com/**. Select your country. Type "magnesium sulfate" (or synonyms) into the search box. You will automatically receive information on relevant news releases posted within the last 30 days. The search results are shown by order of relevance.

Reuters Health

The Reuters' Medical News and Health eLine databases can be very useful in exploring news archives relating to magnesium sulfate. While some of the listed articles are free to view, others are available for purchase for a nominal fee. To access this archive, go to **http://www.reutershealth.com/en/index.html** and search by "magnesium sulfate" (or synonyms). The following was recently listed in this archive for magnesium sulfate:

- **Salbutamol with magnesium sulfate helpful in acute asthma**
  Source: Reuters Medical News
  Date: February 23, 2000

- **Oral nicardipine superior to magnesium sulfate as a tocolytic**
  Source: Reuters Medical News
  Date: December 30, 1999
- **American Academy of Neurology: Magnesium sulfate an effective therapy for acute migraine**
  Source: Reuters Medical News
  Date: April 23, 1999
- **Rofecoxib comparable to magnesium sulfate in arresting preterm labor**
  Source: Reuters Industry Breifing
  Date: May 07, 2004
- **Antenatal magnesium sulfate for preterm labor worsens neonatal outcomes**
  Source: Reuters Medical News
  Date: June 27, 2002
- **Maternal magnesium sulfate use linked to lowered cerebral perfusion in preterm infants**
  Source: Reuters Medical News
  Date: August 08, 2001

The NIH

Within MEDLINEplus, the NIH has made an agreement with the New York Times Syndicate, the AP News Service, and Reuters to deliver news that can be browsed by the public. Search news releases at **http://www.nlm.nih.gov/medlineplus/alphanews_a.html**. MEDLINEplus allows you to browse across an alphabetical index. Or you can search by date at the following Web page: **http://www.nlm.nih.gov/medlineplus/newsbydate.html**. Often, news items are indexed by MEDLINEplus within its search engine.

Business Wire

Business Wire is similar to PR Newswire. To access this archive, simply go to **http://www.businesswire.com/**. You can scan the news by industry category or company name.

Market Wire

Market Wire is more focused on technology than the other wires. To browse the latest press releases by topic, such as alternative medicine, biotechnology, fitness, healthcare, legal, nutrition, and pharmaceuticals, access Market Wire's Medical/Health channel at **http://www.marketwire.com/mw/release_index?channel=MedicalHealth**. Or simply go to Market Wire's home page at **http://www.marketwire.com/mw/home**, type "magnesium sulfate" (or synonyms) into the search box, and click on "Search News." As this service is technology oriented, you may wish to use it when searching for press releases covering diagnostic procedures or tests.

Search Engines

Medical news is also available in the news sections of commercial Internet search engines. See the health news page at Yahoo (**http://dir.yahoo.com/Health/News_and_Media/**), or you can use this Web site's general news search page at **http://news.yahoo.com/**. Type in "magnesium sulfate" (or synonyms). If you know the name of a company that is relevant to magnesium sulfate, you can go to any stock trading Web site (such as **http://www.etrade.com/**) and search for the company name there. News items across various news sources are reported on indicated hyperlinks. Google offers a similar service at **http://news.google.com/**.

BBC

Covering news from a more European perspective, the British Broadcasting Corporation (BBC) allows the public free access to their news archive located at **http://www.bbc.co.uk/**. Search by "magnesium sulfate" (or synonyms).

Academic Periodicals covering Magnesium Sulfate

Numerous periodicals are currently indexed within the National Library of Medicine's PubMed database that are known to publish articles relating to magnesium sulfate. In addition to these sources, you can search for articles covering magnesium sulfate that have been published by any of the periodicals listed in previous chapters. To find the latest studies published, go to **http://www.ncbi.nlm.nih.gov/pubmed**, type the name of the periodical into the search box, and click "Go."

If you want complete details about the historical contents of a journal, you can also visit the following Web site: **http://www.ncbi.nlm.nih.gov/entrez/jrbrowser.cgi**. Here, type in the name of the journal or its abbreviation, and you will receive an index of published articles. At **http://locatorplus.gov/**, you can retrieve more indexing information on medical periodicals (e.g. the name of the publisher). Select the button "Search LOCATORplus." Then type in the name of the journal and select the advanced search option "Journal Title Search."

CHAPTER 6. RESEARCHING MEDICATIONS

Overview

While a number of hard copy or CD-ROM resources are available for researching medications, a more flexible method is to use Internet-based databases. Broadly speaking, there are two sources of information on approved medications: public sources and private sources. We will emphasize free-to-use public sources.

U.S. Pharmacopeia

Because of historical investments by various organizations and the emergence of the Internet, it has become rather simple to learn about the medications recommended for magnesium sulfate. One such source is the United States Pharmacopeia. In 1820, eleven physicians met in Washington, D.C. to establish the first compendium of standard drugs for the United States. They called this compendium the U.S. Pharmacopeia (USP). Today, the USP is a non-profit organization consisting of 800 volunteer scientists, eleven elected officials, and 400 representatives of state associations and colleges of medicine and pharmacy. The USP is located in Rockville, Maryland, and its home page is located at **http://www.usp.org/**. The USP currently provides standards for over 3,700 medications. The resulting USP DI® Advice for the Patient® can be accessed through the National Library of Medicine of the National Institutes of Health. The database is partially derived from lists of federally approved medications in the Food and Drug Administration's (FDA) Drug Approvals database, located at **http://www.fda.gov/cder/da/da.htm**.

While the FDA database is rather large and difficult to navigate, the Phamacopeia is both user-friendly and free to use. It covers more than 9,000 prescription and over-the-counter medications. To access this database, simply type the following hyperlink into your Web browser: **http://www.nlm.nih.gov/medlineplus/druginformation.html**. To view examples of a given medication (brand names, category, description, preparation, proper use, precautions, side effects, etc.), simply follow the hyperlinks indicated within the United States Pharmacopeia (USP).

Below, we have compiled a list of medications associated with magnesium sulfate. If you would like more information on a particular medication, the provided hyperlinks will direct you to ample documentation (e.g. typical dosage, side effects, drug-interaction risks, etc.).

The following drugs have been mentioned in the Pharmacopeia and other sources as being potentially applicable to magnesium sulfate:

Laxatives

- **Oral - U.S. Brands:** Agoral; Alophen; Alphamul; Alramucil Orange; Alramucil Regular; Bisac-Evac; Black-Draught; Black-Draught Lax-Senna; Carter's Little Pills; Cholac; Citroma; Citrucel Orange Flavor; Citrucel Sugar-Free Orange Flavor; Colace; Constilac; Constulose; Correctol; Correctol Caplets; Correctol Herbal Tea; Correctol Stool Softener Soft Gels; D.O.S. Softgels; DC Softgels; Diocto; Diocto-C; Dioeze; Diosuccin; Docu-K Plus; DOK; DOK Softgels; Dr. Caldwell Senna Laxative; D-S-S; D-S-S plus; Dulcolax; Emulsoil; Enulose; Epsom salts; Equalactin; Evac-U-Gen; Ex-Lax; Ex-Lax Chocolate; FemiLax; Fiberall; Fibercon Caplets; Fiber-Lax; FiberNorm; Fleet Laxative; Fleet Mineral Oil; Fleet Phospho-Soda; Fleet Soflax Gelcaps; Fleet Soflax Overnight Gelcaps; Fletcher's Castoria; Genasoft Plus Softgels; Gentle Laxative; Haley's M-O; Herbal Laxative; Hydrocil Instant; Kondremul Plain; Konsyl; Konsyl Easy Mix; Konsyl-D; Konsyl-Orange; Konsyl-Orange Sugar Free; Laxinate 100; Liqui-Doss; Mag-Ox 400; Maltsupex; Metamucil; Metamucil Apple Crisp Fiber Wafers; Metamucil Cinnamon Spice Fiber Wafers; Metamucil Orange Flavor; Metamucil Smooth Sugar-Free, Citrus Flavor; Metamucil Smooth Sugar-Free, Orange Flavor; Metamucil Smooth Sugar-Free, Regular Flavor; Metamucil Smooth, Citrus Flavor; Metamucil Smooth, Orange Flavor; Metamucil Sugar-Free, Lemon-Lime Flavor; Metamucil Sugar-Free, Orange Flavor; MiraLax; Modane; Modane Bulk; Mylanta Natural Fiber Supplement; Mylanta Sugar Free Natural Fiber Supplement; Nature's Remedy; Neoloid; Perdiem; Perdiem Fiber; Peri-Colace; Peri-Dos Softgels; Phillips' Chewable; Phillips' Concentrated; Phillips' Milk of Magnesia; Phillips' Stool Softner Laxative Softgels; Prompt; Purge; Reguloid Natural; Reguloid Natural Sugar Free; Reguloid Orange; Reguloid Orange Sugar Free; Senexon; Senna-Gen; Senokot; Senokot Children's Syrup; Senokot-S; SenokotXTRA; Senolax; Serutan; Serutan Toasted Granules; Silace; Silace-C; Sulfolax; Surfak; Syllact; Veracolate; V-Lax; X-Prep Liquid
  http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202319.html

Magnesium Supplements

- **Systemic - U.S. Brands:** Almora; Chloromag; Citroma; Concentrated Phillips' Milk of Magnesia; Mag-200; Mag-L-100; Magonate; Mag-Ox 400; Mag-Tab SR; Magtrate; Maox; MGP; Phillips' Chewable Tablets; Phillips' Milk of Magnesia; Slow-Mag; Uro-Mag
  http://www.nlm.nih.gov/medlineplus/druginfo/uspdi/202644.html

Commercial Databases

In addition to the medications listed in the USP above, a number of commercial sites are available by subscription to physicians and their institutions. Or, you may be able to access these sources from your local medical library.

Mosby's Drug Consult™

Mosby's Drug Consult™ database (also available on CD-ROM and book format) covers 45,000 drug products including generics and international brands. It provides prescribing information, drug interactions, and patient information. Subscription information is available at the following hyperlink: **http://www.mosbysdrugconsult.com/**.

PDR*health*

The PDR*health* database is a free-to-use, drug information search engine that has been written for the public in layman's terms. It contains FDA-approved drug information adapted from the Physicians' Desk Reference (PDR) database. PDR*health* can be searched by brand name, generic name, or indication. It features multiple drug interactions reports. Search PDR*health* at **http://www.pdrhealth.com/drug_info/index.html**.

Other Web Sites

Drugs.com (**www.drugs.com**) reproduces the information in the Pharmacopeia as well as commercial information. You may also want to consider the Web site of the Medical Letter, Inc. (**http://www.medletter.com/**) which allows users to download articles on various drugs and therapeutics for a nominal fee.

If you have any questions about a medical treatment, the FDA may have an office near you. Look for their number in the blue pages of the phone book. You can also contact the FDA through its toll-free number, 1-888-INFO-FDA (1-888-463-6332), or on the World Wide Web at **www.fda.gov**.

APPENDICES

APPENDIX A. PHYSICIAN RESOURCES

Overview

In this chapter, we focus on databases and Internet-based guidelines and information resources created or written for a professional audience.

NIH Guidelines

Commonly referred to as "clinical" or "professional" guidelines, the National Institutes of Health publish physician guidelines for the most common diseases. Publications are available at the following by relevant Institute[9]:

- Office of the Director (OD); guidelines consolidated across agencies available at **http://www.nih.gov/health/consumer/conkey.htm**
- National Institute of General Medical Sciences (NIGMS); fact sheets available at **http://www.nigms.nih.gov/news/facts/**
- National Library of Medicine (NLM); extensive encyclopedia (A.D.A.M., Inc.) with guidelines: **http://www.nlm.nih.gov/medlineplus/healthtopics.html**
- National Cancer Institute (NCI); guidelines available at **http://www.cancer.gov/cancerinfo/list.aspx?viewid=5f35036e-5497-4d86-8c2c-714a9f7c8d25**
- National Eye Institute (NEI); guidelines available at **http://www.nei.nih.gov/order/index.htm**
- National Heart, Lung, and Blood Institute (NHLBI); guidelines available at **http://www.nhlbi.nih.gov/guidelines/index.htm**
- National Human Genome Research Institute (NHGRI); research available at **http://www.genome.gov/page.cfm?pageID=10000375**
- National Institute on Aging (NIA); guidelines available at **http://www.nia.nih.gov/health/**

[9] These publications are typically written by one or more of the various NIH Institutes.

- National Institute on Alcohol Abuse and Alcoholism (NIAAA); guidelines available at **http://www.niaaa.nih.gov/publications/publications.htm**
- National Institute of Allergy and Infectious Diseases (NIAID); guidelines available at **http://www.niaid.nih.gov/publications/**
- National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS); fact sheets and guidelines available at **http://www.niams.nih.gov/hi/index.htm**
- National Institute of Child Health and Human Development (NICHD); guidelines available at **http://www.nichd.nih.gov/publications/pubskey.cfm**
- National Institute on Deafness and Other Communication Disorders (NIDCD); fact sheets and guidelines at **http://www.nidcd.nih.gov/health/**
- National Institute of Dental and Craniofacial Research (NIDCR); guidelines available at **http://www.nidr.nih.gov/health/**
- National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK); guidelines available at **http://www.niddk.nih.gov/health/health.htm**
- National Institute on Drug Abuse (NIDA); guidelines available at **http://www.nida.nih.gov/DrugAbuse.html**
- National Institute of Environmental Health Sciences (NIEHS); environmental health information available at **http://www.niehs.nih.gov/external/facts.htm**
- National Institute of Mental Health (NIMH); guidelines available at **http://www.nimh.nih.gov/practitioners/index.cfm**
- National Institute of Neurological Disorders and Stroke (NINDS); neurological disorder information pages available at **http://www.ninds.nih.gov/health_and_medical/disorder_index.htm**
- National Institute of Nursing Research (NINR); publications on selected illnesses at **http://www.nih.gov/ninr/news-info/publications.html**
- National Institute of Biomedical Imaging and Bioengineering; general information at **http://grants.nih.gov/grants/becon/becon_info.htm**
- Center for Information Technology (CIT); referrals to other agencies based on keyword searches available at **http://kb.nih.gov/www_query_main.asp**
- National Center for Complementary and Alternative Medicine (NCCAM); health information available at **http://nccam.nih.gov/health/**
- National Center for Research Resources (NCRR); various information directories available at **http://www.ncrr.nih.gov/publications.asp**
- Office of Rare Diseases; various fact sheets available at **http://rarediseases.info.nih.gov/html/resources/rep_pubs.html**
- Centers for Disease Control and Prevention; various fact sheets on infectious diseases available at **http://www.cdc.gov/publications.htm**

NIH Databases

In addition to the various Institutes of Health that publish professional guidelines, the NIH has designed a number of databases for professionals.[10] Physician-oriented resources provide a wide variety of information related to the biomedical and health sciences, both past and present. The format of these resources varies. Searchable databases, bibliographic citations, full-text articles (when available), archival collections, and images are all available. The following are referenced by the National Library of Medicine:[11]

- **Bioethics:** Access to published literature on the ethical, legal, and public policy issues surrounding healthcare and biomedical research. This information is provided in conjunction with the Kennedy Institute of Ethics located at Georgetown University, Washington, D.C.: **http://www.nlm.nih.gov/databases/databases_bioethics.html**
- **HIV/AIDS Resources:** Describes various links and databases dedicated to HIV/AIDS research: **http://www.nlm.nih.gov/pubs/factsheets/aidsinfs.html**
- **NLM Online Exhibitions:** Describes "Exhibitions in the History of Medicine": **http://www.nlm.nih.gov/exhibition/exhibition.html**. Additional resources for historical scholarship in medicine: **http://www.nlm.nih.gov/hmd/hmd.html**
- **Biotechnology Information:** Access to public databases. The National Center for Biotechnology Information conducts research in computational biology, develops software tools for analyzing genome data, and disseminates biomedical information for the better understanding of molecular processes affecting human health and disease: **http://www.ncbi.nlm.nih.gov/**
- **Population Information:** The National Library of Medicine provides access to worldwide coverage of population, family planning, and related health issues, including family planning technology and programs, fertility, and population law and policy: **http://www.nlm.nih.gov/databases/databases_population.html**
- **Cancer Information:** Access to cancer-oriented databases: **http://www.nlm.nih.gov/databases/databases_cancer.html**
- **Profiles in Science:** Offering the archival collections of prominent twentieth-century biomedical scientists to the public through modern digital technology: **http://www.profiles.nlm.nih.gov/**
- **Chemical Information:** Provides links to various chemical databases and references: **http://sis.nlm.nih.gov/Chem/ChemMain.html**
- **Clinical Alerts:** Reports the release of findings from the NIH-funded clinical trials where such release could significantly affect morbidity and mortality: **http://www.nlm.nih.gov/databases/alerts/clinical_alerts.html**
- **Space Life Sciences:** Provides links and information to space-based research (including NASA): **http://www.nlm.nih.gov/databases/databases_space.html**
- **MEDLINE:** Bibliographic database covering the fields of medicine, nursing, dentistry, veterinary medicine, the healthcare system, and the pre-clinical sciences: **http://www.nlm.nih.gov/databases/databases_medline.html**

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[10] Remember, for the general public, the National Library of Medicine recommends the databases referenced in MEDLINE*plus* (**http://medlineplus.gov/** or **http://www.nlm.nih.gov/medlineplus/databases.html**).

[11] See **http://www.nlm.nih.gov/databases/databases.html**.

- **Toxicology and Environmental Health Information (TOXNET):** Databases covering toxicology and environmental health: **http://sis.nlm.nih.gov/Tox/ToxMain.html**
- **Visible Human Interface:** Anatomically detailed, three-dimensional representations of normal male and female human bodies: **http://www.nlm.nih.gov/research/visible/visible_human.html**

The NLM Gateway[12]

The NLM (National Library of Medicine) Gateway is a Web-based system that lets users search simultaneously in multiple retrieval systems at the U.S. National Library of Medicine (NLM). It allows users of NLM services to initiate searches from one Web interface, providing one-stop searching for many of NLM's information resources or databases.[13] To use the NLM Gateway, simply go to the search site at **http://gateway.nlm.nih.gov/gw/Cmd**. Type "magnesium sulfate" (or synonyms) into the search box and click "Search." The results will be presented in a tabular form, indicating the number of references in each database category.

Results Summary

Category	Items Found
Journal Articles	4515
Books / Periodicals / Audio Visual	15
Consumer Health	871
Meeting Abstracts	1
Other Collections	244
Total	5646

HSTAT[14]

HSTAT is a free, Web-based resource that provides access to full-text documents used in healthcare decision-making.[15] These documents include clinical practice guidelines, quick-reference guides for clinicians, consumer health brochures, evidence reports and technology assessments from the Agency for Healthcare Research and Quality (AHRQ), as well as AHRQ's Put Prevention Into Practice.[16] Simply search by "magnesium sulfate" (or synonyms) at the following Web site: **http://text.nlm.nih.gov**.

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[12] Adapted from NLM: **http://gateway.nlm.nih.gov/gw/Cmd?Overview.x**.

[13] The NLM Gateway is currently being developed by the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) of the National Institutes of Health (NIH).

[14] Adapted from HSTAT: **http://www.nlm.nih.gov/pubs/factsheets/hstat.html**.

[15] The HSTAT URL is **http://hstat.nlm.nih.gov/**.

[16] Other important documents in HSTAT include: the National Institutes of Health (NIH) Consensus Conference Reports and Technology Assessment Reports; the HIV/AIDS Treatment Information Service (ATIS) resource documents; the Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Treatment (SAMHSA/CSAT) Treatment Improvement Protocols (TIP) and Center for Substance Abuse Prevention (SAMHSA/CSAP) Prevention Enhancement Protocols System (PEPS); the Public Health Service (PHS) Preventive Services Task Force's *Guide to Clinical Preventive Services*; the independent, nonfederal Task Force on Community Services' *Guide to Community Preventive Services*; and the Health Technology Advisory Committee (HTAC) of the Minnesota Health Care Commission (MHCC) health technology evaluations.

Coffee Break: Tutorials for Biologists[17]

Coffee Break is a general healthcare site that takes a scientific view of the news and covers recent breakthroughs in biology that may one day assist physicians in developing treatments. Here you will find a collection of short reports on recent biological discoveries. Each report incorporates interactive tutorials that demonstrate how bioinformatics tools are used as a part of the research process. Currently, all Coffee Breaks are written by NCBI staff.[18] Each report is about 400 words and is usually based on a discovery reported in one or more articles from recently published, peer-reviewed literature.[19] This site has new articles every few weeks, so it can be considered an online magazine of sorts. It is intended for general background information. You can access the Coffee Break Web site at the following hyperlink: **http://www.ncbi.nlm.nih.gov/Coffeebreak/**.

Other Commercial Databases

In addition to resources maintained by official agencies, other databases exist that are commercial ventures addressing medical professionals. Here are some examples that may interest you:

- **CliniWeb International:** Index and table of contents to selected clinical information on the Internet; see **http://www.ohsu.edu/cliniweb/**.
- **Medical World Search:** Searches full text from thousands of selected medical sites on the Internet; see **http://www.mwsearch.com/**.

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[17] Adapted from **http://www.ncbi.nlm.nih.gov/Coffeebreak/Archive/FAQ.html**.

[18] The figure that accompanies each article is frequently supplied by an expert external to NCBI, in which case the source of the figure is cited. The result is an interactive tutorial that tells a biological story.

[19] After a brief introduction that sets the work described into a broader context, the report focuses on how a molecular understanding can provide explanations of observed biology and lead to therapies for diseases. Each vignette is accompanied by a figure and hypertext links that lead to a series of pages that interactively show how NCBI tools and resources are used in the research process.

APPENDIX B. PATIENT RESOURCES

Overview

Official agencies, as well as federally funded institutions supported by national grants, frequently publish a variety of guidelines written with the patient in mind. These are typically called "Fact Sheets" or "Guidelines." They can take the form of a brochure, information kit, pamphlet, or flyer. Often they are only a few pages in length. Since new guidelines on magnesium sulfate can appear at any moment and be published by a number of sources, the best approach to finding guidelines is to systematically scan the Internet-based services that post them.

Patient Guideline Sources

The remainder of this chapter directs you to sources which either publish or can help you find additional guidelines on topics related to magnesium sulfate. Due to space limitations, these sources are listed in a concise manner. Do not hesitate to consult the following sources by either using the Internet hyperlink provided, or, in cases where the contact information is provided, contacting the publisher or author directly.

The National Institutes of Health

The NIH gateway to patients is located at **http://health.nih.gov/**. From this site, you can search across various sources and institutes, a number of which are summarized below.

Topic Pages: MEDLINEplus

The National Library of Medicine has created a vast and patient-oriented healthcare information portal called MEDLINEplus. Within this Internet-based system are "health topic pages" which list links to available materials relevant to magnesium sulfate. To access this system, log on to **http://www.nlm.nih.gov/medlineplus/healthtopics.html**. From there you can either search using the alphabetical index or browse by broad topic areas. Recently, MEDLINEplus listed the following when searched for "magnesium sulfate":

Anal and Rectal Diseases
http://www.nlm.nih.gov/medlineplus/analandrectaldiseases.html

Colonic Diseases
http://www.nlm.nih.gov/medlineplus/colonicdiseases.html

Eating Disorders
http://www.nlm.nih.gov/medlineplus/eatingdisorders.html

Irritable Bowel Syndrome
http://www.nlm.nih.gov/medlineplus/irritablebowelsyndrome.html

You may also choose to use the search utility provided by MEDLINEplus at the following Web address: **http://www.nlm.nih.gov/medlineplus/**. Simply type a keyword into the search box and click "Search." This utility is similar to the NIH search utility, with the exception that it only includes materials that are linked within the MEDLINEplus system (mostly patient-oriented information). It also has the disadvantage of generating unstructured results. We recommend, therefore, that you use this method only if you have a very targeted search.

The NIH Search Utility

The NIH search utility allows you to search for documents on over 100 selected Web sites that comprise the NIH-WEB-SPACE. Each of these servers is "crawled" and indexed on an ongoing basis. Your search will produce a list of various documents, all of which will relate in some way to magnesium sulfate. The drawbacks of this approach are that the information is not organized by theme and that the references are often a mix of information for professionals and patients. Nevertheless, a large number of the listed Web sites provide useful background information. We can only recommend this route, therefore, for relatively rare or specific disorders, or when using highly targeted searches. To use the NIH search utility, visit the following Web page: **http://search.nih.gov/index.html**.

Additional Web Sources

A number of Web sites are available to the public that often link to government sites. These can also point you in the direction of essential information. The following is a representative sample:

- AOL: **http://search.aol.com/cat.adp?id=168&layer=&from=subcats**
- Family Village: **http://www.familyvillage.wisc.edu/specific.htm**
- Google: **http://directory.google.com/Top/Health/Conditions_and_Diseases/**
- Med Help International: **http://www.medhelp.org/HealthTopics/A.html**
- Open Directory Project: **http://dmoz.org/Health/Conditions_and_Diseases/**
- Yahoo.com: **http://dir.yahoo.com/Health/Diseases_and_Conditions/**
- WebMD®Health: **http://my.webmd.com/health_topics**

Finding Associations

There are several Internet directories that provide lists of medical associations with information on or resources relating to magnesium sulfate. By consulting all of associations listed in this chapter, you will have nearly exhausted all sources for patient associations concerned with magnesium sulfate.

The National Health Information Center (NHIC)

The National Health Information Center (NHIC) offers a free referral service to help people find organizations that provide information about magnesium sulfate. For more information, see the NHIC's Web site at **http://www.health.gov/NHIC/** or contact an information specialist by calling 1-800-336-4797.

Directory of Health Organizations

The Directory of Health Organizations, provided by the National Library of Medicine Specialized Information Services, is a comprehensive source of information on associations. The Directory of Health Organizations database can be accessed via the Internet at **http://www.sis.nlm.nih.gov/Dir/DirMain.html**. It is composed of two parts: DIRLINE and Health Hotlines.

The DIRLINE database comprises some 10,000 records of organizations, research centers, and government institutes and associations that primarily focus on health and biomedicine. To access DIRLINE directly, go to the following Web site: **http://dirline.nlm.nih.gov/**. Simply type in "magnesium sulfate" (or a synonym), and you will receive information on all relevant organizations listed in the database.

Health Hotlines directs you to toll-free numbers to over 300 organizations. You can access this database directly at **http://www.sis.nlm.nih.gov/hotlines/**. On this page, you are given the option to search by keyword or by browsing the subject list. When you have received your search results, click on the name of the organization for its description and contact information.

The Combined Health Information Database

Another comprehensive source of information on healthcare associations is the Combined Health Information Database. Using the "Detailed Search" option, you will need to limit your search to "Organizations" and "magnesium sulfate". Type the following hyperlink into your Web browser: **http://chid.nih.gov/detail/detail.html**. To find associations, use the drop boxes at the bottom of the search page where "You may refine your search by." For publication date, select "All Years." Then, select your preferred language and the format option "Organization Resource Sheet." Type "magnesium sulfate" (or synonyms) into the "For these words:" box. You should check back periodically with this database since it is updated every three months.

The National Organization for Rare Disorders, Inc.

The National Organization for Rare Disorders, Inc. has prepared a Web site that provides, at no charge, lists of associations organized by health topic. You can access this database at the following Web site: **http://www.rarediseases.org/search/orgsearch.html**. Type "magnesium sulfate" (or a synonym) into the search box, and click "Submit Query."

APPENDIX C. FINDING MEDICAL LIBRARIES

Overview

In this Appendix, we show you how to quickly find a medical library in your area.

Preparation

Your local public library and medical libraries have interlibrary loan programs with the National Library of Medicine (NLM), one of the largest medical collections in the world. According to the NLM, most of the literature in the general and historical collections of the National Library of Medicine is available on interlibrary loan to any library. If you would like to access NLM medical literature, then visit a library in your area that can request the publications for you.[20]

Finding a Local Medical Library

The quickest method to locate medical libraries is to use the Internet-based directory published by the National Network of Libraries of Medicine (NN/LM). This network includes 4626 members and affiliates that provide many services to librarians, health professionals, and the public. To find a library in your area, simply visit **http://nnlm.gov/members/adv.html** or call 1-800-338-7657.

Medical Libraries in the U.S. and Canada

In addition to the NN/LM, the National Library of Medicine (NLM) lists a number of libraries with reference facilities that are open to the public. The following is the NLM's list and includes hyperlinks to each library's Web site. These Web pages can provide information on hours of operation and other restrictions. The list below is a small sample of

[20] Adapted from the NLM: **http://www.nlm.nih.gov/psd/cas/interlibrary.html**.

libraries recommended by the National Library of Medicine (sorted alphabetically by name of the U.S. state or Canadian province where the library is located)[21]:

- **Alabama:** Health InfoNet of Jefferson County (Jefferson County Library Cooperative, Lister Hill Library of the Health Sciences), **http://www.uab.edu/infonet/**
- **Alabama:** Richard M. Scrushy Library (American Sports Medicine Institute)
- **Arizona:** Samaritan Regional Medical Center: The Learning Center (Samaritan Health System, Phoenix, Arizona), **http://www.samaritan.edu/library/bannerlibs.htm**
- **California:** Kris Kelly Health Information Center (St. Joseph Health System, Humboldt), **http://www.humboldt1.com/~kkhic/index.html**
- **California:** Community Health Library of Los Gatos, **http://www.healthlib.org/orgresources.html**
- **California:** Consumer Health Program and Services (CHIPS) (County of Los Angeles Public Library, Los Angeles County Harbor-UCLA Medical Center Library) - Carson, CA, **http://www.colapublib.org/services/chips.html**
- **California:** Gateway Health Library (Sutter Gould Medical Foundation)
- **California:** Health Library (Stanford University Medical Center), **http://www-med.stanford.edu/healthlibrary/**
- **California:** Patient Education Resource Center - Health Information and Resources (University of California, San Francisco), **http://sfghdean.ucsf.edu/barnett/PERC/default.asp**
- **California:** Redwood Health Library (Petaluma Health Care District), **http://www.phcd.org/rdwdlib.html**
- **California:** Los Gatos PlaneTree Health Library, **http://planetreesanjose.org/**
- **California:** Sutter Resource Library (Sutter Hospitals Foundation, Sacramento), **http://suttermedicalcenter.org/library/**
- **California:** Health Sciences Libraries (University of California, Davis), **http://www.lib.ucdavis.edu/healthsci/**
- **California:** ValleyCare Health Library & Ryan Comer Cancer Resource Center (ValleyCare Health System, Pleasanton), **http://gaelnet.stmarys-ca.edu/other.libs/gbal/east/vchl.html**
- **California:** Washington Community Health Resource Library (Fremont), **http://www.healthlibrary.org/**
- **Colorado:** William V. Gervasini Memorial Library (Exempla Healthcare), **http://www.saintjosephdenver.org/yourhealth/libraries/**
- **Connecticut:** Hartford Hospital Health Science Libraries (Hartford Hospital), **http://www.harthosp.org/library/**
- **Connecticut:** Healthnet: Connecticut Consumer Health Information Center (University of Connecticut Health Center, Lyman Maynard Stowe Library), **http://library.uchc.edu/departm/hnet/**

[21] Abstracted from **http://www.nlm.nih.gov/medlineplus/libraries.html**.

- **Connecticut:** Waterbury Hospital Health Center Library (Waterbury Hospital, Waterbury), **http://www.waterburyhospital.com/library/consumer.shtml**
- **Delaware:** Consumer Health Library (Christiana Care Health System, Eugene du Pont Preventive Medicine & Rehabilitation Institute, Wilmington), **http://www.christianacare.org/health_guide/health_guide_pmri_health_info.cfm**
- **Delaware:** Lewis B. Flinn Library (Delaware Academy of Medicine, Wilmington), **http://www.delamed.org/chls.html**
- **Georgia:** Family Resource Library (Medical College of Georgia, Augusta), **http://cmc.mcg.edu/kids_families/fam_resources/fam_res_lib/frl.htm**
- **Georgia:** Health Resource Center (Medical Center of Central Georgia, Macon), **http://www.mccg.org/hrc/hrchome.asp**
- **Hawaii:** Hawaii Medical Library: Consumer Health Information Service (Hawaii Medical Library, Honolulu), **http://hml.org/CHIS/**
- **Idaho:** DeArmond Consumer Health Library (Kootenai Medical Center, Coeur d'Alene), **http://www.nicon.org/DeArmond/index.htm**
- **Illinois:** Health Learning Center of Northwestern Memorial Hospital (Chicago), **http://www.nmh.org/health_info/hlc.html**
- **Illinois:** Medical Library (OSF Saint Francis Medical Center, Peoria), **http://www.osfsaintfrancis.org/general/library/**
- **Kentucky:** Medical Library - Services for Patients, Families, Students & the Public (Central Baptist Hospital, Lexington), **http://www.centralbap.com/education/community/library.cfm**
- **Kentucky:** University of Kentucky - Health Information Library (Chandler Medical Center, Lexington), **http://www.mc.uky.edu/PatientEd/**
- **Louisiana:** Alton Ochsner Medical Foundation Library (Alton Ochsner Medical Foundation, New Orleans), **http://www.ochsner.org/library/**
- **Louisiana:** Louisiana State University Health Sciences Center Medical Library-Shreveport, **http://lib-sh.lsuhsc.edu/**
- **Maine:** Franklin Memorial Hospital Medical Library (Franklin Memorial Hospital, Farmington), **http://www.fchn.org/fmh/lib.htm**
- **Maine:** Gerrish-True Health Sciences Library (Central Maine Medical Center, Lewiston), **http://www.cmmc.org/library/library.html**
- **Maine:** Hadley Parrot Health Science Library (Eastern Maine Healthcare, Bangor), **http://www.emh.org/hll/hpl/guide.htm**
- **Maine:** Maine Medical Center Library (Maine Medical Center, Portland), **http://www.mmc.org/library/**
- **Maine:** Parkview Hospital (Brunswick), **http://www.parkviewhospital.org/**
- **Maine:** Southern Maine Medical Center Health Sciences Library (Southern Maine Medical Center, Biddeford), **http://www.smmc.org/services/service.php3?choice=10**
- **Maine:** Stephens Memorial Hospital's Health Information Library (Western Maine Health, Norway), **http://www.wmhcc.org/Library/**

- **Manitoba, Canada:** Consumer & Patient Health Information Service (University of Manitoba Libraries), **http://www.umanitoba.ca/libraries/units/health/reference/chis.html**
- **Manitoba, Canada:** J.W. Crane Memorial Library (Deer Lodge Centre, Winnipeg), **http://www.deerlodge.mb.ca/crane_library/about.asp**
- **Maryland:** Health Information Center at the Wheaton Regional Library (Montgomery County, Dept. of Public Libraries, Wheaton Regional Library), **http://www.mont.lib.md.us/healthinfo/hic.asp**
- **Massachusetts:** Baystate Medical Center Library (Baystate Health System), **http://www.baystatehealth.com/1024/**
- **Massachusetts:** Boston University Medical Center Alumni Medical Library (Boston University Medical Center), **http://med-libwww.bu.edu/library/lib.html**
- **Massachusetts:** Lowell General Hospital Health Sciences Library (Lowell General Hospital, Lowell), **http://www.lowellgeneral.org/library/HomePageLinks/WWW.htm**
- **Massachusetts:** Paul E. Woodard Health Sciences Library (New England Baptist Hospital, Boston), **http://www.nebh.org/health_lib.asp**
- **Massachusetts:** St. Luke's Hospital Health Sciences Library (St. Luke's Hospital, Southcoast Health System, New Bedford), **http://www.southcoast.org/library/**
- **Massachusetts:** Treadwell Library Consumer Health Reference Center (Massachusetts General Hospital), **http://www.mgh.harvard.edu/library/chrcindex.html**
- **Massachusetts:** UMass HealthNet (University of Massachusetts Medical School, Worchester), **http://healthnet.umassmed.edu/**
- **Michigan:** Botsford General Hospital Library - Consumer Health (Botsford General Hospital, Library & Internet Services), **http://www.botsfordlibrary.org/consumer.htm**
- **Michigan:** Helen DeRoy Medical Library (Providence Hospital and Medical Centers), **http://www.providence-hospital.org/library/**
- **Michigan:** Marquette General Hospital - Consumer Health Library (Marquette General Hospital, Health Information Center), **http://www.mgh.org/center.html**
- **Michigan:** Patient Education Resouce Center - University of Michigan Cancer Center (University of Michigan Comprehensive Cancer Center, Ann Arbor), **http://www.cancer.med.umich.edu/learn/leares.htm**
- **Michigan:** Sladen Library & Center for Health Information Resources - Consumer Health Information (Detroit), **http://www.henryford.com/body.cfm?id=39330**
- **Montana:** Center for Health Information (St. Patrick Hospital and Health Sciences Center, Missoula)
- **National:** Consumer Health Library Directory (Medical Library Association, Consumer and Patient Health Information Section), **http://caphis.mlanet.org/directory/index.html**
- **National:** National Network of Libraries of Medicine (National Library of Medicine) - provides library services for health professionals in the United States who do not have access to a medical library, **http://nnlm.gov/**
- **National:** NN/LM List of Libraries Serving the Public (National Network of Libraries of Medicine), **http://nnlm.gov/members/**

- **Nevada:** Health Science Library, West Charleston Library (Las Vegas-Clark County Library District, Las Vegas), **http://www.lvccld.org/special_collections/medical/index.htm**
- **New Hampshire:** Dartmouth Biomedical Libraries (Dartmouth College Library, Hanover), **http://www.dartmouth.edu/~biomed/resources.htmld/conshealth.htmld/**
- **New Jersey:** Consumer Health Library (Rahway Hospital, Rahway), **http://www.rahwayhospital.com/library.htm**
- **New Jersey:** Dr. Walter Phillips Health Sciences Library (Englewood Hospital and Medical Center, Englewood), **http://www.englewoodhospital.com/links/index.htm**
- **New Jersey:** Meland Foundation (Englewood Hospital and Medical Center, Englewood), **http://www.geocities.com/ResearchTriangle/9360/**
- **New York:** Choices in Health Information (New York Public Library) - NLM Consumer Pilot Project participant, **http://www.nypl.org/branch/health/links.html**
- **New York:** Health Information Center (Upstate Medical University, State University of New York, Syracuse), **http://www.upstate.edu/library/hic/**
- **New York:** Health Sciences Library (Long Island Jewish Medical Center, New Hyde Park), **http://www.lij.edu/library/library.html**
- **New York:** ViaHealth Medical Library (Rochester General Hospital), **http://www.nyam.org/library/**
- **Ohio:** Consumer Health Library (Akron General Medical Center, Medical & Consumer Health Library), **http://www.akrongeneral.org/hwlibrary.htm**
- **Oklahoma:** The Health Information Center at Saint Francis Hospital (Saint Francis Health System, Tulsa), **http://www.sfh-tulsa.com/services/healthinfo.asp**
- **Oregon:** Planetree Health Resource Center (Mid-Columbia Medical Center, The Dalles), **http://www.mcmc.net/phrc/**
- **Pennsylvania:** Community Health Information Library (Milton S. Hershey Medical Center, Hershey), **http://www.hmc.psu.edu/commhealth/**
- **Pennsylvania:** Community Health Resource Library (Geisinger Medical Center, Danville), **http://www.geisinger.edu/education/commlib.shtml**
- **Pennsylvania:** HealthInfo Library (Moses Taylor Hospital, Scranton), **http://www.mth.org/healthwellness.html**
- **Pennsylvania:** Hopwood Library (University of Pittsburgh, Health Sciences Library System, Pittsburgh), **http://www.hsls.pitt.edu/guides/chi/hopwood/index_html**
- **Pennsylvania:** Koop Community Health Information Center (College of Physicians of Philadelphia), **http://www.collphyphil.org/kooppg1.shtml**
- **Pennsylvania:** Learning Resources Center - Medical Library (Susquehanna Health System, Williamsport), **http://www.shscares.org/services/lrc/index.asp**
- **Pennsylvania:** Medical Library (UPMC Health System, Pittsburgh), **http://www.upmc.edu/passavant/library.htm**
- **Quebec, Canada:** Medical Library (Montreal General Hospital), **http://www.mghlib.mcgill.ca/**

- **South Dakota:** Rapid City Regional Hospital Medical Library (Rapid City Regional Hospital), **http://www.rcrh.org/Services/Library/Default.asp**
- **Texas:** Houston HealthWays (Houston Academy of Medicine-Texas Medical Center Library), **http://hhw.library.tmc.edu/**
- **Washington:** Community Health Library (Kittitas Valley Community Hospital), **http://www.kvch.com/**
- **Washington:** Southwest Washington Medical Center Library (Southwest Washington Medical Center, Vancouver), **http://www.swmedicalcenter.com/body.cfm?id=72**

ONLINE GLOSSARIES

The Internet provides access to a number of free-to-use medical dictionaries. The National Library of Medicine has compiled the following list of online dictionaries:

- ADAM Medical Encyclopedia (A.D.A.M., Inc.), comprehensive medical reference: **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**
- MedicineNet.com Medical Dictionary (MedicineNet, Inc.): **http://www.medterms.com/Script/Main/hp.asp**
- Merriam-Webster Medical Dictionary (Inteli-Health, Inc.): **http://www.intelihealth.com/IH/**
- Multilingual Glossary of Technical and Popular Medical Terms in Eight European Languages (European Commission) - Danish, Dutch, English, French, German, Italian, Portuguese, and Spanish: **http://allserv.rug.ac.be/~rvdstich/eugloss/welcome.html**
- On-line Medical Dictionary (CancerWEB): **http://cancerweb.ncl.ac.uk/omd/**
- Rare Diseases Terms (Office of Rare Diseases): **http://ord.aspensys.com/asp/diseases/diseases.asp**
- Technology Glossary (National Library of Medicine) - Health Care Technology: **http://www.nlm.nih.gov/nichsr/ta101/ta10108.htm**

Beyond these, MEDLINEplus contains a very patient-friendly encyclopedia covering every aspect of medicine (licensed from A.D.A.M., Inc.). The ADAM Medical Encyclopedia can be accessed at **http://www.nlm.nih.gov/medlineplus/encyclopedia.html**. ADAM is also available on commercial Web sites such as drkoop.com (**http://www.drkoop.com/**) and Web MD (**http://my.webmd.com/adam/asset/adam_disease_articles/a_to_z/a**).

Online Dictionary Directories

The following are additional online directories compiled by the National Library of Medicine, including a number of specialized medical dictionaries:

- Medical Dictionaries: Medical & Biological (World Health Organization): **http://www.who.int/hlt/virtuallibrary/English/diction.htm#Medical**
- MEL-Michigan Electronic Library List of Online Health and Medical Dictionaries (Michigan Electronic Library): **http://mel.lib.mi.us/health/health-dictionaries.html**
- Patient Education: Glossaries (DMOZ Open Directory Project): **http://dmoz.org/Health/Education/Patient_Education/Glossaries/**
- Web of Online Dictionaries (Bucknell University): **http://www.yourdictionary.com/diction5.html#medicine**

MAGNESIUM SULFATE DICTIONARY

The definitions below are derived from official public sources, including the National Institutes of Health [NIH] and the European Union [EU].

Abdominal: Having to do with the abdomen, which is the part of the body between the chest and the hips that contains the pancreas, stomach, intestines, liver, gallbladder, and other organs. [NIH]

Abrasion: 1. The wearing away of a substance or structure (such as the skin or the teeth) through some unusual or abnormal mechanical process. 2. An area of body surface denuded of skin or mucous membrane by some unusual or abnormal mechanical process. [EU]

Acceptor: A substance which, while normally not oxidized by oxygen or reduced by hydrogen, can be oxidized or reduced in presence of a substance which is itself undergoing oxidation or reduction. [NIH]

Acetylcholine: A neurotransmitter. Acetylcholine in vertebrates is the major transmitter at neuromuscular junctions, autonomic ganglia, parasympathetic effector junctions, a subset of sympathetic effector junctions, and at many sites in the central nervous system. It is generally not used as an administered drug because it is broken down very rapidly by cholinesterases, but it is useful in some ophthalmological applications. [NIH]

Actin: Essential component of the cell skeleton. [NIH]

Activities of Daily Living: The performance of the basic activities of self care, such as dressing, ambulation, eating, etc., in rehabilitation. [NIH]

Adduct: Complex formed when a carcinogen combines with DNA or a protein. [NIH]

Adenine: A purine base and a fundamental unit of adenine nucleotides. [NIH]

Adenosine: A nucleoside that is composed of adenine and d-ribose. Adenosine or adenosine derivatives play many important biological roles in addition to being components of DNA and RNA. Adenosine itself is a neurotransmitter. [NIH]

Adenosine Triphosphate: Adenosine 5'-(tetrahydrogen triphosphate). An adenine nucleotide containing three phosphate groups esterified to the sugar moiety. In addition to its crucial roles in metabolism adenosine triphosphate is a neurotransmitter. [NIH]

Adjuvant: A substance which aids another, such as an auxiliary remedy; in immunology, nonspecific stimulator (e.g., BCG vaccine) of the immune response. [EU]

Adjuvant Therapy: Treatment given after the primary treatment to increase the chances of a cure. Adjuvant therapy may include chemotherapy, radiation therapy, or hormone therapy. [NIH]

Adrenergic: Activated by, characteristic of, or secreting epinephrine or substances with similar activity; the term is applied to those nerve fibres that liberate norepinephrine at a synapse when a nerve impulse passes, i.e., the sympathetic fibres. [EU]

Adsorption: The condensation of gases, liquids, or dissolved substances on the surfaces of solids. It includes adsorptive phenomena of bacteria and viruses as well as of tissues treated with exogenous drugs and chemicals. [NIH]

Adsorptive: It captures volatile compounds by binding them to agents such as activated carbon or adsorptive resins. [NIH]

Adverse Effect: An unwanted side effect of treatment. [NIH]

Aerobic: In biochemistry, reactions that need oxygen to happen or happen when oxygen is present. [NIH]

Aerosol: A solution of a drug which can be atomized into a fine mist for inhalation therapy. [EU]

Affinity: 1. Inherent likeness or relationship. 2. A special attraction for a specific element, organ, or structure. 3. Chemical affinity; the force that binds atoms in molecules; the tendency of substances to combine by chemical reaction. 4. The strength of noncovalent chemical binding between two substances as measured by the dissociation constant of the complex. 5. In immunology, a thermodynamic expression of the strength of interaction between a single antigen-binding site and a single antigenic determinant (and thus of the stereochemical compatibility between them), most accurately applied to interactions among simple, uniform antigenic determinants such as haptens. Expressed as the association constant (K litres mole -1), which, owing to the heterogeneity of affinities in a population of antibody molecules of a given specificity, actually represents an average value (mean intrinsic association constant). 6. The reciprocal of the dissociation constant. [EU]

Aggravation: An increasing in seriousness or severity; an act or circumstance that intensifies, or makes worse. [EU]

Agonist: In anatomy, a prime mover. In pharmacology, a drug that has affinity for and stimulates physiologic activity at cell receptors normally stimulated by naturally occurring substances. [EU]

Airway: A device for securing unobstructed passage of air into and out of the lungs during general anesthesia. [NIH]

Albuminuria: More than normal amounts of a protein called albumin in the urine. Albuminuria may be a sign of kidney disease. [NIH]

Albuterol: A racemic mixture with a 1:1 ratio of the r-isomer, levalbuterol, and s-albuterol. It is a short-acting beta 2-adrenergic agonist with its main clinical use in asthma. [NIH]

Algorithms: A procedure consisting of a sequence of algebraic formulas and/or logical steps to calculate or determine a given task. [NIH]

Alimentary: Pertaining to food or nutritive material, or to the organs of digestion. [EU]

Alkaline: Having the reactions of an alkali. [EU]

Alkaloid: A member of a large group of chemicals that are made by plants and have nitrogen in them. Some alkaloids have been shown to work against cancer. [NIH]

Alloys: A mixture of metallic elements or compounds with other metallic or metalloid elements in varying proportions. [NIH]

Alternative medicine: Practices not generally recognized by the medical community as standard or conventional medical approaches and used instead of standard treatments. Alternative medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Aluminum: A metallic element that has the atomic number 13, atomic symbol Al, and atomic weight 26.98. [NIH]

Aluminum Oxide: Al2O3. An oxide of aluminum, occurring in nature as various minerals such as bauxite, corundum, etc. It is used as an adsorbent, desiccating agent, and catalyst, and in the manufacture of dental cements and refractories. [NIH]

Ameliorated: A changeable condition which prevents the consequence of a failure or accident from becoming as bad as it otherwise would. [NIH]

Amikacin: A broad-spectrum antibiotic derived from kanamycin. It is reno- and ototoxic like the other aminoglycoside antibiotics. [NIH]

Amine: An organic compound containing nitrogen; any member of a group of chemical compounds formed from ammonia by replacement of one or more of the hydrogen atoms by organic (hydrocarbon) radicals. The amines are distinguished as primary, secondary, and tertiary, according to whether one, two, or three hydrogen atoms are replaced. The amines include allylamine, amylamine, ethylamine, methylamine, phenylamine, propylamine, and many other compounds. [EU]

Amino acid: Any organic compound containing an amino (-NH2 and a carboxyl (- COOH) group. The 20 a-amino acids listed in the accompanying table are the amino acids from which proteins are synthesized by formation of peptide bonds during ribosomal translation of messenger RNA; all except glycine, which is not optically active, have the L configuration. Other amino acids occurring in proteins, such as hydroxyproline in collagen, are formed by posttranslational enzymatic modification of amino acids residues in polypeptide chains. There are also several important amino acids, such as the neurotransmitter y-aminobutyric acid, that have no relation to proteins. Abbreviated AA. [EU]

Amiodarone: An antianginal and antiarrhythmic drug. It increases the duration of ventricular and atrial muscle action by inhibiting Na,K-activated myocardial adenosine triphosphatase. There is a resulting decrease in heart rate and in vascular resistance. [NIH]

Ammonia: A colorless alkaline gas. It is formed in the body during decomposition of organic materials during a large number of metabolically important reactions. [NIH]

Amnion: The extraembryonic membrane which contains the embryo and amniotic fluid. [NIH]

Amniotic Fluid: Amniotic cavity fluid which is produced by the amnion and fetal lungs and kidneys. [NIH]

Anaesthesia: Loss of feeling or sensation. Although the term is used for loss of tactile sensibility, or of any of the other senses, it is applied especially to loss of the sensation of pain, as it is induced to permit performance of surgery or other painful procedures. [EU]

Analgesic: An agent that alleviates pain without causing loss of consciousness. [EU]

Anastomosis: A procedure to connect healthy sections of tubular structures in the body after the diseased portion has been surgically removed. [NIH]

Anatomical: Pertaining to anatomy, or to the structure of the organism. [EU]

Androgens: A class of sex hormones associated with the development and maintenance of the secondary male sex characteristics, sperm induction, and sexual differentiation. In addition to increasing virility and libido, they also increase nitrogen and water retention and stimulate skeletal growth. [NIH]

Anesthesia: A state characterized by loss of feeling or sensation. This depression of nerve function is usually the result of pharmacologic action and is induced to allow performance of surgery or other painful procedures. [NIH]

Aneurysm: A sac formed by the dilatation of the wall of an artery, a vein, or the heart. [NIH]

Angina: Chest pain that originates in the heart. [NIH]

Anginal: Pertaining to or characteristic of angina. [EU]

Angiogenesis: Blood vessel formation. Tumor angiogenesis is the growth of blood vessels from surrounding tissue to a solid tumor. This is caused by the release of chemicals by the tumor. [NIH]

Angiotensinogen: An alpha-globulin of which a fragment of 14 amino acids is converted by

renin to angiotensin I, the inactive precursor of angiotensin II. It is a member of the serpin superfamily. [NIH]

Anhydrous: Deprived or destitute of water. [EU]

Animal model: An animal with a disease either the same as or like a disease in humans. Animal models are used to study the development and progression of diseases and to test new treatments before they are given to humans. Animals with transplanted human cancers or other tissues are called xenograft models. [NIH]

Anionic: Pertaining to or containing an anion. [EU]

Anions: Negatively charged atoms, radicals or groups of atoms which travel to the anode or positive pole during electrolysis. [NIH]

Antagonism: Interference with, or inhibition of, the growth of a living organism by another living organism, due either to creation of unfavorable conditions (e. g. exhaustion of food supplies) or to production of a specific antibiotic substance (e. g. penicillin). [NIH]

Antianginal: Counteracting angina or anginal conditions. [EU]

Antiarrhythmic: An agent that prevents or alleviates cardiac arrhythmia. [EU]

Antibacterial: A substance that destroys bacteria or suppresses their growth or reproduction. [EU]

Antibiotic: A drug used to treat infections caused by bacteria and other microorganisms. [NIH]

Antibody: A type of protein made by certain white blood cells in response to a foreign substance (antigen). Each antibody can bind to only a specific antigen. The purpose of this binding is to help destroy the antigen. Antibodies can work in several ways, depending on the nature of the antigen. Some antibodies destroy antigens directly. Others make it easier for white blood cells to destroy the antigen. [NIH]

Anticonvulsant: An agent that prevents or relieves convulsions. [EU]

Anticonvulsive: An agent that prevents or relieves convulsions. [NIH]

Antidote: A remedy for counteracting a poison. [EU]

Antiemetic: An agent that prevents or alleviates nausea and vomiting. Also antinauseant. [EU]

Antigen: Any substance which is capable, under appropriate conditions, of inducing a specific immune response and of reacting with the products of that response, that is, with specific antibody or specifically sensitized T-lymphocytes, or both. Antigens may be soluble substances, such as toxins and foreign proteins, or particulate, such as bacteria and tissue cells; however, only the portion of the protein or polysaccharide molecule known as the antigenic determinant (q.v.) combines with antibody or a specific receptor on a lymphocyte. Abbreviated Ag. [EU]

Antihypertensive: An agent that reduces high blood pressure. [EU]

Anti-inflammatory: Having to do with reducing inflammation. [NIH]

Anti-Inflammatory Agents: Substances that reduce or suppress inflammation. [NIH]

Antimicrobial: Killing microorganisms, or suppressing their multiplication or growth. [EU]

Antineoplastic: Inhibiting or preventing the development of neoplasms, checking the maturation and proliferation of malignant cells. [EU]

Antineoplastic Agents: Substances that inhibit or prevent the proliferation of neoplasms. [NIH]

Antioxidant: A substance that prevents damage caused by free radicals. Free radicals are

highly reactive chemicals that often contain oxygen. They are produced when molecules are split to give products that have unpaired electrons. This process is called oxidation. [NIH]

Antipyretic: An agent that relieves or reduces fever. Called also antifebrile, antithermic and febrifuge. [EU]

Antiseptic: A substance that inhibits the growth and development of microorganisms without necessarily killing them. [EU]

Antiviral: Destroying viruses or suppressing their replication. [EU]

Anus: The opening of the rectum to the outside of the body. [NIH]

Applicability: A list of the commodities to which the candidate method can be applied as presented or with minor modifications. [NIH]

Aqueous: Having to do with water. [NIH]

Arginine: An essential amino acid that is physiologically active in the L-form. [NIH]

Aromatase: An enzyme which converts androgens to estrogens by desaturating ring A of the steroid. This enzyme complex is located in the endoplasmic reticulum of estrogen-producing cells including ovaries, placenta, testicular Sertoli and Leydig cells, adipose, and brain tissues. The enzyme complex has two components, one of which is the CYP19 gene product, the aromatase cytochrome P-450. The other component is NADPH-cytochrome P-450 reductase which transfers reducing equivalents to P-450(arom). EC 1.14.13.-. [NIH]

Arrhythmia: Any variation from the normal rhythm or rate of the heart beat. [NIH]

Arterial: Pertaining to an artery or to the arteries. [EU]

Arteries: The vessels carrying blood away from the heart. [NIH]

Arterioles: The smallest divisions of the arteries located between the muscular arteries and the capillaries. [NIH]

Artery: Vessel-carrying blood from the heart to various parts of the body. [NIH]

Ascorbic Acid: A six carbon compound related to glucose. It is found naturally in citrus fruits and many vegetables. Ascorbic acid is an essential nutrient in human diets, and necessary to maintain connective tissue and bone. Its biologically active form, vitamin C, functions as a reducing agent and coenzyme in several metabolic pathways. Vitamin C is considered an antioxidant. [NIH]

Asphyxia: A pathological condition caused by lack of oxygen, manifested in impending or actual cessation of life. [NIH]

Astringent: Causing contraction, usually locally after topical application. [EU]

Asymptomatic: Having no signs or symptoms of disease. [NIH]

Atrial: Pertaining to an atrium. [EU]

Atrial Fibrillation: Disorder of cardiac rhythm characterized by rapid, irregular atrial impulses and ineffective atrial contractions. [NIH]

Atrioventricular: Pertaining to an atrium of the heart and to a ventricle. [EU]

Atrioventricular Node: A small nodular mass of specialized muscle fibers located in the interatrial septum near the opening of the coronary sinus. It gives rise to the atrioventricular bundle of the conduction system of the heart. [NIH]

Atrium: A chamber; used in anatomical nomenclature to designate a chamber affording entrance to another structure or organ. Usually used alone to designate an atrium of the heart. [EU]

Attenuated: Strain with weakened or reduced virulence. [NIH]

Attenuation: Reduction of transmitted sound energy or its electrical equivalent. [NIH]

Aura: A subjective sensation or motor phenomenon that precedes and marks the of a paroxysmal attack, such as an epileptic attack on set. [EU]

Autodigestion: Autolysis; a condition found in disease of the stomach: the stomach wall is digested by the gastric juice. [NIH]

Autonomic: Self-controlling; functionally independent. [EU]

Azides: Organic or inorganic compounds that contain the -N3 group. [NIH]

Babesiosis: A group of tick-borne diseases of mammals including zoonoses in humans. They are caused by protozoans of the genus babesia, which parasitize erythrocytes, producing hemolysis. In the U.S., the organism's natural host is mice and transmission is by the deer tick ixodes scapularis. [NIH]

Bacteria: Unicellular prokaryotic microorganisms which generally possess rigid cell walls, multiply by cell division, and exhibit three principal forms: round or coccal, rodlike or bacillary, and spiral or spirochetal. [NIH]

Bactericidal: Substance lethal to bacteria; substance capable of killing bacteria. [NIH]

Baths: The immersion or washing of the body or any of its parts in water or other medium for cleansing or medical treatment. It includes bathing for personal hygiene as well as for medical purposes with the addition of therapeutic agents, such as alkalines, antiseptics, oil, etc. [NIH]

Benign: Not cancerous; does not invade nearby tissue or spread to other parts of the body. [NIH]

Bilateral: Affecting both the right and left side of body. [NIH]

Bile: An emulsifying agent produced in the liver and secreted into the duodenum. Its composition includes bile acids and salts, cholesterol, and electrolytes. It aids digestion of fats in the duodenum. [NIH]

Bile Pigments: Pigments that give a characteristic color to bile including: bilirubin, biliverdine, and bilicyanin. [NIH]

Biliary: Having to do with the liver, bile ducts, and/or gallbladder. [NIH]

Biliary Tract: The gallbladder and its ducts. [NIH]

Biochemical: Relating to biochemistry; characterized by, produced by, or involving chemical reactions in living organisms. [EU]

Biological Transport: The movement of materials (including biochemical substances and drugs) across cell membranes and epithelial layers, usually by passive diffusion. [NIH]

Biotechnology: Body of knowledge related to the use of organisms, cells or cell-derived constituents for the purpose of developing products which are technically, scientifically and clinically useful. Alteration of biologic function at the molecular level (i.e., genetic engineering) is a central focus; laboratory methods used include transfection and cloning technologies, sequence and structure analysis algorithms, computer databases, and gene and protein structure function analysis and prediction. [NIH]

Biotic: Pertaining to living organisms in their ecological rather than their physiological relations. [NIH]

Blastocyst: The mammalian embryo in the post-morula stage in which a fluid-filled cavity, enclosed primarily by trophoblast, contains an inner cell mass which becomes the embryonic disc. [NIH]

Bleeding Time: Duration of blood flow after skin puncture. This test is used as a measure of

capillary and platelet function. [NIH]

Blood Coagulation: The process of the interaction of blood coagulation factors that results in an insoluble fibrin clot. [NIH]

Blood Flow Velocity: A value equal to the total volume flow divided by the cross-sectional area of the vascular bed. [NIH]

Blood Glucose: Glucose in blood. [NIH]

Blood pressure: The pressure of blood against the walls of a blood vessel or heart chamber. Unless there is reference to another location, such as the pulmonary artery or one of the heart chambers, it refers to the pressure in the systemic arteries, as measured, for example, in the forearm. [NIH]

Blood vessel: A tube in the body through which blood circulates. Blood vessels include a network of arteries, arterioles, capillaries, venules, and veins. [NIH]

Body Fluids: Liquid components of living organisms. [NIH]

Bolus: A single dose of drug usually injected into a blood vessel over a short period of time. Also called bolus infusion. [NIH]

Bolus infusion: A single dose of drug usually injected into a blood vessel over a short period of time. Also called bolus. [NIH]

Bone Marrow: The soft tissue filling the cavities of bones. Bone marrow exists in two types, yellow and red. Yellow marrow is found in the large cavities of large bones and consists mostly of fat cells and a few primitive blood cells. Red marrow is a hematopoietic tissue and is the site of production of erythrocytes and granular leukocytes. Bone marrow is made up of a framework of connective tissue containing branching fibers with the frame being filled with marrow cells. [NIH]

Boron: A trace element with the atomic symbol B, atomic number 5, and atomic weight 10.81. Boron-10, an isotope of boron, is used as a neutron absorber in boron neutron capture therapy. [NIH]

Boron Neutron Capture Therapy: A technique for the treatment of neoplasms, especially gliomas and melanomas in which boron-10, an isotope, is introduced into the target cells followed by irradiation with thermal neutrons. [NIH]

Bowel: The long tube-shaped organ in the abdomen that completes the process of digestion. There is both a small and a large bowel. Also called the intestine. [NIH]

Bradycardia: Excessive slowness in the action of the heart, usually with a heart rate below 60 beats per minute. [NIH]

Bradykinin: A nonapeptide messenger that is enzymatically produced from kallidin in the blood where it is a potent but short-lived agent of arteriolar dilation and increased capillary permeability. Bradykinin is also released from mast cells during asthma attacks, from gut walls as a gastrointestinal vasodilator, from damaged tissues as a pain signal, and may be a neurotransmitter. [NIH]

Brain Injuries: Acute and chronic injuries to the brain, including the cerebral hemispheres, cerebellum, and brain stem. Clinical manifestations depend on the nature of injury. Diffuse trauma to the brain is frequently associated with diffuse axonal injury or coma, post-traumatic. Localized injuries may be associated with neurobehavioral manifestations; hemiparesis, or other focal neurologic deficits. [NIH]

Brain Stem: The part of the brain that connects the cerebral hemispheres with the spinal cord. It consists of the mesencephalon, pons, and medulla oblongata. [NIH]

Broad-spectrum: Effective against a wide range of microorganisms; said of an antibiotic. [EU]

Bronchi: The larger air passages of the lungs arising from the terminal bifurcation of the trachea. [NIH]

Bronchial: Pertaining to one or more bronchi. [EU]

Bronchial Hyperreactivity: Tendency of the smooth muscle of the tracheobronchial tree to contract more intensely in response to a given stimulus than it does in the response seen in normal individuals. This condition is present in virtually all symptomatic patients with asthma. The most prominent manifestation of this smooth muscle contraction is a decrease in airway caliber that can be readily measured in the pulmonary function laboratory. [NIH]

Bronchoconstriction: Diminution of the caliber of a bronchus physiologically or as a result of pharmacological intervention. [NIH]

Bronchodilator: A drug that relaxes the smooth muscles in the constricted airway. [NIH]

Bronchospasm: Spasmodic contraction of the smooth muscle of the bronchi, as occurs in asthma. [EU]

Bronchus: A large air passage that leads from the trachea (windpipe) to the lung. [NIH]

Bupivacaine: A widely used local anesthetic agent. [NIH]

Bypass: A surgical procedure in which the doctor creates a new pathway for the flow of body fluids. [NIH]

Calcium: A basic element found in nearly all organized tissues. It is a member of the alkaline earth family of metals with the atomic symbol Ca, atomic number 20, and atomic weight 40. Calcium is the most abundant mineral in the body and combines with phosphorus to form calcium phosphate in the bones and teeth. It is essential for the normal functioning of nerves and muscles and plays a role in blood coagulation (as factor IV) and in many enzymatic processes. [NIH]

Calcium Carbonate: Carbonic acid calcium salt (CaCO3). An odorless, tasteless powder or crystal that occurs in nature. It is used therapeutically as a phosphate buffer in hemodialysis patients and as a calcium supplement. [NIH]

Calcium Chloride: A salt used to replenish calcium levels, as an acid-producing diuretic, and as an antidote for magnesium poisoning. [NIH]

Calcium Gluconate: The calcium salt of gluconic acid. The compound has a variety of uses, including its use as a calcium replenisher in hypocalcemic states. [NIH]

Calcium Hydroxide: Ca(OH)2. A white powder that has many therapeutic uses. Because of its ability to stimulate mineralization, it is found in many dental formulations. [NIH]

Calcium Sulfate: It exists in an anhydrous form and in various states of hydration: the hemihydrate is plaster of Paris, the dihydrate is gypsum. It is used in building materials, as a desiccant, in dentistry as an impression material, cast, or die, and in medicine for immobilizing casts and as a tablet excipient. [NIH]

Capillary: Any one of the minute vessels that connect the arterioles and venules, forming a network in nearly all parts of the body. Their walls act as semipermeable membranes for the interchange of various substances, including fluids, between the blood and tissue fluid; called also vas capillare. [EU]

Capsules: Hard or soft soluble containers used for the oral administration of medicine. [NIH]

Carbohydrates: The largest class of organic compounds, including starches, glycogens, cellulose, gums, and simple sugars. Carbohydrates are composed of carbon, hydrogen, and oxygen in a ratio of Cn(H2O)n. [NIH]

Carbon Dioxide: A colorless, odorless gas that can be formed by the body and is necessary for the respiration cycle of plants and animals. [NIH]

Carboxy: Cannabinoid. [NIH]

Carboxylic Acids: Organic compounds containing the carboxy group (-COOH). This group of compounds includes amino acids and fatty acids. Carboxylic acids can be saturated, unsaturated, or aromatic. [NIH]

Carcinogen: Any substance that causes cancer. [NIH]

Carcinogenic: Producing carcinoma. [EU]

Cardiac: Having to do with the heart. [NIH]

Cardiac arrest: A sudden stop of heart function. [NIH]

Cardiomyopathy: A general diagnostic term designating primary myocardial disease, often of obscure or unknown etiology. [EU]

Cardiovascular: Having to do with the heart and blood vessels. [NIH]

Carotene: The general name for a group of pigments found in green, yellow, and leafy vegetables, and yellow fruits. The pigments are fat-soluble, unsaturated aliphatic hydrocarbons functioning as provitamins and are converted to vitamin A through enzymatic processes in the intestinal wall. [NIH]

Cascara: Component of the dried bark of a buckthorn (Rhamnus purshiana) that contains the anthraquinone emodin. It is used as a laxative. [NIH]

Case report: A detailed report of the diagnosis, treatment, and follow-up of an individual patient. Case reports also contain some demographic information about the patient (for example, age, gender, ethnic origin). [NIH]

Castor Oil: Oil obtained from seeds of Ricinus communis that is used as a cathartic and as a plasticizer. [NIH]

Catecholamine: A group of chemical substances manufactured by the adrenal medulla and secreted during physiological stress. [NIH]

Catheter: A flexible tube used to deliver fluids into or withdraw fluids from the body. [NIH]

Catheterization: Use or insertion of a tubular device into a duct, blood vessel, hollow organ, or body cavity for injecting or withdrawing fluids for diagnostic or therapeutic purposes. It differs from intubation in that the tube here is used to restore or maintain patency in obstructions. [NIH]

Cathode: An electrode, usually an incandescent filament of tungsten, which emits electrons in an X-ray tube. [NIH]

Cations: Postively charged atoms, radicals or groups of atoms which travel to the cathode or negative pole during electrolysis. [NIH]

Cause of Death: Factors which produce cessation of all vital bodily functions. They can be analyzed from an epidemiologic viewpoint. [NIH]

Cell: The individual unit that makes up all of the tissues of the body. All living things are made up of one or more cells. [NIH]

Cellobiose: A disaccharide consisting of two glucose units in beta (1-4) glycosidic linkage. Obtained from the partial hydrolysis of cellulose. [NIH]

Cellulose: A polysaccharide with glucose units linked as in cellobiose. It is the chief constituent of plant fibers, cotton being the purest natural form of the substance. As a raw material, it forms the basis for many derivatives used in chromatography, ion exchange materials, explosives manufacturing, and pharmaceutical preparations. [NIH]

Central Nervous System: The main information-processing organs of the nervous system, consisting of the brain, spinal cord, and meninges. [NIH]

Central Nervous System Infections: Pathogenic infections of the brain, spinal cord, and meninges. DNA virus infections; RNA virus infections; bacterial infections; mycoplasma infections; Spirochaetales infections; fungal infections; protozoan infections; helminthiasis; and prion diseases may involve the central nervous system as a primary or secondary process. [NIH]

Cerebellum: Part of the metencephalon that lies in the posterior cranial fossa behind the brain stem. It is concerned with the coordination of movement. [NIH]

Cerebral: Of or pertaining of the cerebrum or the brain. [EU]

Cerebral hemispheres: The two halves of the cerebrum, the part of the brain that controls muscle functions of the body and also controls speech, emotions, reading, writing, and learning. The right hemisphere controls muscle movement on the left side of the body, and the left hemisphere controls muscle movement on the right side of the body. [NIH]

Cerebral Palsy: Refers to a motor disability caused by a brain dysfunction. [NIH]

Cerebrovascular: Pertaining to the blood vessels of the cerebrum, or brain. [EU]

Cerebrum: The largest part of the brain. It is divided into two hemispheres, or halves, called the cerebral hemispheres. The cerebrum controls muscle functions of the body and also controls speech, emotions, reading, writing, and learning. [NIH]

Cervical: Relating to the neck, or to the neck of any organ or structure. Cervical lymph nodes are located in the neck; cervical cancer refers to cancer of the uterine cervix, which is the lower, narrow end (the "neck") of the uterus. [NIH]

Cervix: The lower, narrow end of the uterus that forms a canal between the uterus and vagina. [NIH]

Chemotherapy: Treatment with anticancer drugs. [NIH]

Chin: The anatomical frontal portion of the mandible, also known as the mentum, that contains the line of fusion of the two separate halves of the mandible (symphysis menti). This line of fusion divides inferiorly to enclose a triangular area called the mental protuberance. On each side, inferior to the second premolar tooth, is the mental foramen for the passage of blood vessels and a nerve. [NIH]

Chlorine: A greenish-yellow, diatomic gas that is a member of the halogen family of elements. It has the atomic symbol Cl, atomic number 17, and atomic weight 70.906. It is a powerful irritant that can cause fatal pulmonary edema. Chlorine is used in manufacturing, as a reagent in synthetic chemistry, for water purification, and in the production of chlorinated lime, which is used in fabric bleaching. [NIH]

Cholelithiasis: Presence or formation of gallstones. [NIH]

Chronic: A disease or condition that persists or progresses over a long period of time. [NIH]

Cinchona: A genus of rubiaceous South American trees that yields the toxic cinchona alkaloids from their bark; quinine, quinidine, chinconine, cinchonidine and others are used to treat malaria and cardiac arrhythmias. [NIH]

Circulatory system: The system that contains the heart and the blood vessels and moves blood throughout the body. This system helps tissues get enough oxygen and nutrients, and it helps them get rid of waste products. The lymph system, which connects with the blood system, is often considered part of the circulatory system. [NIH]

CIS: Cancer Information Service. The CIS is the National Cancer Institute's link to the public, interpreting and explaining research findings in a clear and understandable manner, and providing personalized responses to specific questions about cancer. Access the CIS by calling 1-800-4-CANCER, or by using the Web site at http://cis.nci.nih.gov. [NIH]

Clinical study: A research study in which patients receive treatment in a clinic or other medical facility. Reports of clinical studies can contain results for single patients (case reports) or many patients (case series or clinical trials). [NIH]

Clinical trial: A research study that tests how well new medical treatments or other interventions work in people. Each study is designed to test new methods of screening, prevention, diagnosis, or treatment of a disease. [NIH]

Cloning: The production of a number of genetically identical individuals; in genetic engineering, a process for the efficient replication of a great number of identical DNA molecules. [NIH]

Coenzyme: An organic nonprotein molecule, frequently a phosphorylated derivative of a water-soluble vitamin, that binds with the protein molecule (apoenzyme) to form the active enzyme (holoenzyme). [EU]

Collagen: A polypeptide substance comprising about one third of the total protein in mammalian organisms. It is the main constituent of skin, connective tissue, and the organic substance of bones and teeth. Different forms of collagen are produced in the body but all consist of three alpha-polypeptide chains arranged in a triple helix. Collagen is differentiated from other fibrous proteins, such as elastin, by the content of proline, hydroxyproline, and hydroxylysine; by the absence of tryptophan; and particularly by the high content of polar groups which are responsible for its swelling properties. [NIH]

Collapse: 1. A state of extreme prostration and depression, with failure of circulation. 2. Abnormal falling in of the walls of any part of organ. [EU]

Colloidal: Of the nature of a colloid. [EU]

Communis: Common tendon of the rectus group of muscles that surrounds the optic foramen and a portion of the superior orbital fissure, to the anterior margin of which it is attached at the spina recti lateralis. [NIH]

Complement: A term originally used to refer to the heat-labile factor in serum that causes immune cytolysis, the lysis of antibody-coated cells, and now referring to the entire functionally related system comprising at least 20 distinct serum proteins that is the effector not only of immune cytolysis but also of other biologic functions. Complement activation occurs by two different sequences, the classic and alternative pathways. The proteins of the classic pathway are termed 'components of complement' and are designated by the symbols C1 through C9. C1 is a calcium-dependent complex of three distinct proteins C1q, C1r and C1s. The proteins of the alternative pathway (collectively referred to as the properdin system) and complement regulatory proteins are known by semisystematic or trivial names. Fragments resulting from proteolytic cleavage of complement proteins are designated with lower-case letter suffixes, e.g., C3a. Inactivated fragments may be designated with the suffix 'i', e.g. C3bi. Activated components or complexes with biological activity are designated by a bar over the symbol e.g. C1 or C4b,2a. The classic pathway is activated by the binding of C1 to classic pathway activators, primarily antigen-antibody complexes containing IgM, IgG1, IgG3; C1q binds to a single IgM molecule or two adjacent IgG molecules. The alternative pathway can be activated by IgA immune complexes and also by nonimmunologic materials including bacterial endotoxins, microbial polysaccharides, and cell walls. Activation of the classic pathway triggers an enzymatic cascade involving C1, C4, C2 and C3; activation of the alternative pathway triggers a cascade involving C3 and factors B, D and P. Both result in the cleavage of C5 and the formation of the membrane attack complex. Complement activation also results in the formation of many biologically active complement fragments that act as anaphylatoxins, opsonins, or chemotactic factors. [EU]

Complementary and alternative medicine: CAM. Forms of treatment that are used in addition to (complementary) or instead of (alternative) standard treatments. These practices

are not considered standard medical approaches. CAM includes dietary supplements, megadose vitamins, herbal preparations, special teas, massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Complementary medicine: Practices not generally recognized by the medical community as standard or conventional medical approaches and used to enhance or complement the standard treatments. Complementary medicine includes the taking of dietary supplements, megadose vitamins, and herbal preparations; the drinking of special teas; and practices such as massage therapy, magnet therapy, spiritual healing, and meditation. [NIH]

Computational Biology: A field of biology concerned with the development of techniques for the collection and manipulation of biological data, and the use of such data to make biological discoveries or predictions. This field encompasses all computational methods and theories applicable to molecular biology and areas of computer-based techniques for solving biological problems including manipulation of models and datasets. [NIH]

Conception: The onset of pregnancy, marked by implantation of the blastocyst; the formation of a viable zygote. [EU]

Conduction: The transfer of sound waves, heat, nervous impulses, or electricity. [EU]

Cone: One of the special retinal receptor elements which are presumed to be primarily concerned with perception of light and color stimuli when the eye is adapted to light. [NIH]

Congenita: Displacement, subluxation, or malposition of the crystalline lens. [NIH]

Congestive heart failure: Weakness of the heart muscle that leads to a buildup of fluid in body tissues. [NIH]

Conjugated: Acting or operating as if joined; simultaneous. [EU]

Connective Tissue: Tissue that supports and binds other tissues. It consists of connective tissue cells embedded in a large amount of extracellular matrix. [NIH]

Connective Tissue: Tissue that supports and binds other tissues. It consists of connective tissue cells embedded in a large amount of extracellular matrix. [NIH]

Consciousness: Sense of awareness of self and of the environment. [NIH]

Constriction: The act of constricting. [NIH]

Constriction, Pathologic: The condition of an anatomical structure's being constricted beyond normal dimensions. [NIH]

Contraindications: Any factor or sign that it is unwise to pursue a certain kind of action or treatment, e. g. giving a general anesthetic to a person with pneumonia. [NIH]

Control group: In a clinical trial, the group that does not receive the new treatment being studied. This group is compared to the group that receives the new treatment, to see if the new treatment works. [NIH]

Controlled clinical trial: A clinical study that includes a comparison (control) group. The comparison group receives a placebo, another treatment, or no treatment at all. [NIH]

Controlled study: An experiment or clinical trial that includes a comparison (control) group. [NIH]

Conventional therapy: A currently accepted and widely used treatment for a certain type of disease, based on the results of past research. Also called conventional treatment. [NIH]

Conventional treatment: A currently accepted and widely used treatment for a certain type of disease, based on the results of past research. Also called conventional therapy. [NIH]

Convulsions: A general term referring to sudden and often violent motor activity of cerebral or brainstem origin. Convulsions may also occur in the absence of an electrical cerebral

discharge (e.g., in response to hypotension). [NIH]

Corn Oil: Oil from corn or corn plant. [NIH]

Coronary: Encircling in the manner of a crown; a term applied to vessels; nerves, ligaments, etc. The term usually denotes the arteries that supply the heart muscle and, by extension, a pathologic involvement of them. [EU]

Coronary Arteriosclerosis: Thickening and loss of elasticity of the coronary arteries. [NIH]

Coronary Thrombosis: Presence of a thrombus in a coronary artery, often causing a myocardial infarction. [NIH]

Cortex: The outer layer of an organ or other body structure, as distinguished from the internal substance. [EU]

Cortical: Pertaining to or of the nature of a cortex or bark. [EU]

Cortisone: A natural steroid hormone produced in the adrenal gland. It can also be made in the laboratory. Cortisone reduces swelling and can suppress immune responses. [NIH]

Cranial: Pertaining to the cranium, or to the anterior (in animals) or superior (in humans) end of the body. [EU]

Craniocerebral Trauma: Traumatic injuries involving the cranium and intracranial structures (i.e., brain; cranial nerves; meninges; and other structures). Injuries may be classified by whether or not the skull is penetrated (i.e., penetrating vs. nonpenetrating) or whether there is an associated hemorrhage. [NIH]

Creatine: An amino acid that occurs in vertebrate tissues and in urine. In muscle tissue, creatine generally occurs as phosphocreatine. Creatine is excreted as creatinine in the urine. [NIH]

Creatinine: A compound that is excreted from the body in urine. Creatinine levels are measured to monitor kidney function. [NIH]

Curative: Tending to overcome disease and promote recovery. [EU]

Cyanosis: A bluish or purplish discoloration of the skin and mucous membranes due to an increase in the amount of deoxygenated hemoglobin in the blood or a structural defect in the hemoglobin molecule. [NIH]

Cyclic: Pertaining to or occurring in a cycle or cycles; the term is applied to chemical compounds that contain a ring of atoms in the nucleus. [EU]

Cyclosporine: A drug used to help reduce the risk of rejection of organ and bone marrow transplants by the body. It is also used in clinical trials to make cancer cells more sensitive to anticancer drugs. [NIH]

Cysteine: A thiol-containing non-essential amino acid that is oxidized to form cystine. [NIH]

Cytochrome: Any electron transfer hemoprotein having a mode of action in which the transfer of a single electron is effected by a reversible valence change of the central iron atom of the heme prosthetic group between the +2 and +3 oxidation states; classified as cytochromes a in which the heme contains a formyl side chain, cytochromes b, which contain protoheme or a closely similar heme that is not covalently bound to the protein, cytochromes c in which protoheme or other heme is covalently bound to the protein, and cytochromes d in which the iron-tetrapyrrole has fewer conjugated double bonds than the hemes have. Well-known cytochromes have been numbered consecutively within groups and are designated by subscripts (beginning with no subscript), e.g. cytochromes c, c1, C2, . New cytochromes are named according to the wavelength in nanometres of the absorption maximum of the a-band of the iron (II) form in pyridine, e.g., c-555. [EU]

Cytomegalovirus: A genus of the family Herpesviridae, subfamily Betaherpesvirinae,

infecting the salivary glands, liver, spleen, lungs, eyes, and other organs, in which they produce characteristically enlarged cells with intranuclear inclusions. Infection with Cytomegalovirus is also seen as an opportunistic infection in AIDS. [NIH]

Cytomegalovirus Retinitis: Infection of the retina by cytomegalovirus characterized by retinal necrosis, hemorrhage, vessel sheathing, and retinal edema. Cytomegalovirus retinitis is a major opportunistic infection in AIDS patients and can cause blindness. [NIH]

Deamination: The removal of an amino group (NH2) from a chemical compound. [NIH]

Decarboxylation: The removal of a carboxyl group, usually in the form of carbon dioxide, from a chemical compound. [NIH]

Decidua: The epithelial lining of the endometrium that is formed before the fertilized ovum reaches the uterus. The fertilized ovum embeds in the decidua. If the ovum is not fertilized, the decidua is shed during menstruation. [NIH]

Delirium: (DSM III-R) an acute, reversible organic mental disorder characterized by reduced ability to maintain attention to external stimuli and disorganized thinking as manifested by rambling, irrelevant, or incoherent speech; there are also a reduced level of consciousness, sensory misperceptions, disturbance of the sleep-wakefulness cycle and level of psychomotor activity, disorientation to time, place, or person, and memory impairment. Delirium may be caused by a large number of conditions resulting in derangement of cerebral metabolism, including systemic infection, poisoning, drug intoxication or withdrawal, seizures or head trauma, and metabolic disturbances such as hypoxia, hypoglycaemia, fluid, electrolyte, or acid-base imbalances, or hepatic or renal failure. Called also acute confusional state and acute brain syndrome. [EU]

Density: The logarithm to the base 10 of the opacity of an exposed and processed film. [NIH]

Dental Cements: Substances used as bonding or luting agents in restorative denistry, root canal therapy, prosthedontics, and orthodontics. [NIH]

Depressive Disorder: An affective disorder manifested by either a dysphoric mood or loss of interest or pleasure in usual activities. The mood disturbance is prominent and relatively persistent. [NIH]

Detergents: Purifying or cleansing agents, usually salts of long-chain aliphatic bases or acids, that exert cleansing (oil-dissolving) and antimicrobial effects through a surface action that depends on possessing both hydrophilic and hydrophobic properties. [NIH]

Dexamethasone: (11 beta,16 alpha)-9-Fluoro-11,17,21-trihydroxy-16-methylpregna-1,4-diene-3,20-dione. An anti-inflammatory glucocorticoid used either in the free alcohol or esterified form in treatment of conditions that respond generally to cortisone. [NIH]

Diabetes Mellitus: A heterogeneous group of disorders that share glucose intolerance in common. [NIH]

Diagnostic procedure: A method used to identify a disease. [NIH]

Diastolic: Of or pertaining to the diastole. [EU]

Diffuse Axonal Injury: A relatively common sequela of blunt head injury, characterized by a global disruption of axons throughout the brain. Associated clinical features may include neurobehavioral manifestations; persistent vegetative state; dementia; and other disorders. [NIH]

Diffusion: The tendency of a gas or solute to pass from a point of higher pressure or concentration to a point of lower pressure or concentration and to distribute itself throughout the available space; a major mechanism of biological transport. [NIH]

Digestion: The process of breakdown of food for metabolism and use by the body. [NIH]

Digitalis: A genus of toxic herbaceous Eurasian plants of the Scrophulaceae which yield cardiotonic glycosides. The most useful are Digitalis lanata and D. purpurea. [NIH]

Dilatation, Pathologic: The condition of an anatomical structure's being dilated beyond normal dimensions. [NIH]

Dilation: A process by which the pupil is temporarily enlarged with special eye drops (mydriatic); allows the eye care specialist to better view the inside of the eye. [NIH]

Dilator: A device used to stretch or enlarge an opening. [NIH]

Diltiazem: A benzothiazepine derivative with vasodilating action due to its antagonism of the actions of the calcium ion in membrane functions. It is also teratogenic. [NIH]

Dilution: A diluted or attenuated medicine; in homeopathy, the diffusion of a given quantity of a medicinal agent in ten or one hundred times the same quantity of water. [NIH]

Dimethyl: A volatile metabolite of the amino acid methionine. [NIH]

Direct: 1. Straight; in a straight line. 2. Performed immediately and without the intervention of subsidiary means. [EU]

Disease Vectors: Invertebrates or non-human vertebrates which transmit infective organisms from one host to another. [NIH]

Disinfectant: An agent that disinfects; applied particularly to agents used on inanimate objects. [EU]

Disorientation: The loss of proper bearings, or a state of mental confusion as to time, place, or identity. [EU]

Dissociation: 1. The act of separating or state of being separated. 2. The separation of a molecule into two or more fragments (atoms, molecules, ions, or free radicals) produced by the absorption of light or thermal energy or by solvation. 3. In psychology, a defense mechanism in which a group of mental processes are segregated from the rest of a person's mental activity in order to avoid emotional distress, as in the dissociative disorders (q.v.), or in which an idea or object is segregated from its emotional significance; in the first sense it is roughly equivalent to splitting, in the second, to isolation. 4. A defect of mental integration in which one or more groups of mental processes become separated off from normal consciousness and, thus separated, function as a unitary whole. [EU]

Distal: Remote; farther from any point of reference; opposed to proximal. In dentistry, used to designate a position on the dental arch farther from the median line of the jaw. [EU]

Diuretic: A drug that increases the production of urine. [NIH]

Dopamine: An endogenous catecholamine and prominent neurotransmitter in several systems of the brain. In the synthesis of catecholamines from tyrosine, it is the immediate precursor to norepinephrine and epinephrine. Dopamine is a major transmitter in the extrapyramidal system of the brain, and important in regulating movement. A family of dopaminergic receptor subtypes mediate its action. Dopamine is used pharmacologically for its direct (beta adrenergic agonist) and indirect (adrenergic releasing) sympathomimetic effects including its actions as an inotropic agent and as a renal vasodilator. [NIH]

Double-blind: Pertaining to a clinical trial or other experiment in which neither the subject nor the person administering treatment knows which treatment any particular subject is receiving. [EU]

Drive: A state of internal activity of an organism that is a necessary condition before a given stimulus will elicit a class of responses; e.g., a certain level of hunger (drive) must be present before food will elicit an eating response. [NIH]

Drug Interactions: The action of a drug that may affect the activity, metabolism, or toxicity

of another drug. [NIH]

Dyes: Chemical substances that are used to stain and color other materials. The coloring may or may not be permanent. Dyes can also be used as therapeutic agents and test reagents in medicine and scientific research. [NIH]

Dyspnea: Difficult or labored breathing. [NIH]

Eclampsia: Onset of convulsions or coma in a previously diagnosed pre-eclamptic patient. [NIH]

Edema: Excessive amount of watery fluid accumulated in the intercellular spaces, most commonly present in subcutaneous tissue. [NIH]

Efficacy: The extent to which a specific intervention, procedure, regimen, or service produces a beneficial result under ideal conditions. Ideally, the determination of efficacy is based on the results of a randomized control trial. [NIH]

Elastic: Susceptible of resisting and recovering from stretching, compression or distortion applied by a force. [EU]

Electric shock: A dangerous patho-physiological effect resulting from an electric current passing through the body of a human or animal. [NIH]

Electrode: Component of the pacing system which is at the distal end of the lead. It is the interface with living cardiac tissue across which the stimulus is transmitted. [NIH]

Electrolysis: Destruction by passage of a galvanic electric current, as in disintegration of a chemical compound in solution. [NIH]

Electrolyte: A substance that dissociates into ions when fused or in solution, and thus becomes capable of conducting electricity; an ionic solute. [EU]

Electrons: Stable elementary particles having the smallest known negative charge, present in all elements; also called negatrons. Positively charged electrons are called positrons. The numbers, energies and arrangement of electrons around atomic nuclei determine the chemical identities of elements. Beams of electrons are called cathode rays or beta rays, the latter being a high-energy biproduct of nuclear decay. [NIH]

Electroplating: Coating with a metal or alloy by electrolysis. [NIH]

Embryo: The prenatal stage of mammalian development characterized by rapid morphological changes and the differentiation of basic structures. [NIH]

Embryology: The study of the development of an organism during the embryonic and fetal stages of life. [NIH]

Emodin: Purgative anthraquinone found in several plants, especially Rhamnus frangula. It was formerly used as a laxative, but is now used mainly as tool in toxicity studies. [NIH]

Emollient: Softening or soothing; called also malactic. [EU]

Emulsify: To convert or to be converted into an emulsion. [EU]

Emulsion: A preparation of one liquid distributed in small globules throughout the body of a second liquid. The dispersed liquid is the discontinuous phase, and the dispersion medium is the continuous phase. When oil is the dispersed liquid and an aqueous solution is the continuous phase, it is known as an oil-in-water emulsion, whereas when water or aqueous solution is the dispersed phase and oil or oleaginous substance is the continuous phase, it is known as a water-in-oil emulsion. Pharmaceutical emulsions for which official standards have been promulgated include cod liver oil emulsion, cod liver oil emulsion with malt, liquid petrolatum emulsion, and phenolphthalein in liquid petrolatum emulsion. [EU]

Endogenous: Produced inside an organism or cell. The opposite is external (exogenous) production. [NIH]

Endometrium: The layer of tissue that lines the uterus. [NIH]

Endothelium: A layer of epithelium that lines the heart, blood vessels (endothelium, vascular), lymph vessels (endothelium, lymphatic), and the serous cavities of the body. [NIH]

Endothelium-derived: Small molecule that diffuses to the adjacent muscle layer and relaxes it. [NIH]

Environmental Health: The science of controlling or modifying those conditions, influences, or forces surrounding man which relate to promoting, establishing, and maintaining health. [NIH]

Enzymatic: Phase where enzyme cuts the precursor protein. [NIH]

Enzyme: A protein that speeds up chemical reactions in the body. [NIH]

Epidural: The space between the wall of the spinal canal and the covering of the spinal cord. An epidural injection is given into this space. [NIH]

Esophagus: The muscular tube through which food passes from the throat to the stomach. [NIH]

Estrogen: One of the two female sex hormones. [NIH]

Ethanol: A clear, colorless liquid rapidly absorbed from the gastrointestinal tract and distributed throughout the body. It has bactericidal activity and is used often as a topical disinfectant. It is widely used as a solvent and preservative in pharmaceutical preparations as well as serving as the primary ingredient in alcoholic beverages. [NIH]

Ether: One of a class of organic compounds in which any two organic radicals are attached directly to a single oxygen atom. [NIH]

Eutrophication: Growth of a superabundance of algae and other microscopic plant life usually from an enrichment of a natural body of water by the addition of dissolved nutrients, especially nitrogen and phosphorus. It may be natural, induced (water pollution), or controlled (harvesting phytoplankton for food in an aquaculture system). [NIH]

Evacuation: An emptying, as of the bowels. [EU]

Evoke: The electric response recorded from the cerebral cortex after stimulation of a peripheral sense organ. [NIH]

Excipient: Any more or less inert substance added to a prescription in order to confer a suitable consistency or form to the drug; a vehicle. [EU]

Excitability: Property of a cardiac cell whereby, when the cell is depolarized to a critical level (called threshold), the membrane becomes permeable and a regenerative inward current causes an action potential. [NIH]

Excitatory: When cortical neurons are excited, their output increases and each new input they receive while they are still excited raises their output markedly. [NIH]

Excitatory Amino Acids: Endogenous amino acids released by neurons as excitatory neurotransmitters. Glutamic acid is the most common excitatory neurotransmitter in the brain. Aspartic acid has been regarded as an excitatory transmitter for many years, but the extent of its role as a transmitter is unclear. [NIH]

Exhaustion: The feeling of weariness of mind and body. [NIH]

Exogenous: Developed or originating outside the organism, as exogenous disease. [EU]

Extracellular: Outside a cell or cells. [EU]

Extracellular Matrix: A meshwork-like substance found within the extracellular space and in association with the basement membrane of the cell surface. It promotes cellular proliferation and provides a supporting structure to which cells or cell lysates in culture

dishes adhere. [NIH]

Extracellular Matrix Proteins: Macromolecular organic compounds that contain carbon, hydrogen, oxygen, nitrogen, and usually, sulfur. These macromolecules (proteins) form an intricate meshwork in which cells are embedded to construct tissues. Variations in the relative types of macromolecules and their organization determine the type of extracellular matrix, each adapted to the functional requirements of the tissue. The two main classes of macromolecules that form the extracellular matrix are: glycosaminoglycans, usually linked to proteins (proteoglycans), and fibrous proteins (e.g., collagen, elastin, fibronectins and laminin). [NIH]

Extracellular Space: Interstitial space between cells, occupied by fluid as well as amorphous and fibrous substances. [NIH]

Family Planning: Programs or services designed to assist the family in controlling reproduction by either improving or diminishing fertility. [NIH]

Fat: Total lipids including phospholipids. [NIH]

Fatigue: The state of weariness following a period of exertion, mental or physical, characterized by a decreased capacity for work and reduced efficiency to respond to stimuli. [NIH]

Feces: The excrement discharged from the intestines, consisting of bacteria, cells exfoliated from the intestines, secretions, chiefly of the liver, and a small amount of food residue. [EU]

Fertilizers: Substances or mixtures that are added to the soil to supply nutrients or to make available nutrients already present in the soil, in order to increase plant growth and productivity. [NIH]

Fetal Blood: Blood of the fetus. Exchange of nutrients and waste between the fetal and maternal blood occurs via the placenta. The cord blood is blood contained in the umbilical vessels at the time of delivery. [NIH]

Fetal Distress: Adverse or threatening condition of the fetus identified by fetal bradycardia or tachycardia and passage of meconium in vertex presentation. [NIH]

Fetal Heart: The heart of the fetus of any viviparous animal. It refers to the heart in the postembryonic period and is differentiated from the embryonic heart (heart/embryology) only on the basis of time. [NIH]

Fetus: The developing offspring from 7 to 8 weeks after conception until birth. [NIH]

Fibrillation: A small, local, involuntary contraction of muscle, invisible under the skin, resulting from spontaneous activation of single muscle cells or muscle fibres. [EU]

Fibrinogen: Plasma glycoprotein clotted by thrombin, composed of a dimer of three non-identical pairs of polypeptide chains (alpha, beta, gamma) held together by disulfide bonds. Fibrinogen clotting is a sol-gel change involving complex molecular arrangements: whereas fibrinogen is cleaved by thrombin to form polypeptides A and B, the proteolytic action of other enzymes yields different fibrinogen degradation products. [NIH]

Fibrinolytic: Pertaining to, characterized by, or causing the dissolution of fibrin by enzymatic action [EU]

Fibrinolytic Agents: Fibrinolysin or agents that convert plasminogen to fibrinolysin (plasmin). [NIH]

Fibroblasts: Connective tissue cells which secrete an extracellular matrix rich in collagen and other macromolecules. [NIH]

Filler: An inactive substance used to make a product bigger or easier to handle. For example, fillers are often used to make pills or capsules because the amount of active drug is

too small to be handled conveniently. [NIH]

Flatus: Gas passed through the rectum. [NIH]

Fluid Therapy: Therapy whose basic objective is to restore the volume and composition of the body fluids to normal with respect to water-electrolyte balance. Fluids may be administered intravenously, orally, by intermittent gavage, or by hypodermoclysis. [NIH]

Forearm: The part between the elbow and the wrist. [NIH]

Foscarnet: An antiviral agent used in the treatment of cytomegalovirus retinitis. Foscarnet also shows activity against human herpesviruses and HIV. [NIH]

Frostbite: Damage to tissues as the result of low environmental temperatures. [NIH]

Gallbladder: The pear-shaped organ that sits below the liver. Bile is concentrated and stored in the gallbladder. [NIH]

Gas: Air that comes from normal breakdown of food. The gases are passed out of the body through the rectum (flatus) or the mouth (burp). [NIH]

Gastric: Having to do with the stomach. [NIH]

Gastrointestinal: Refers to the stomach and intestines. [NIH]

Gastrointestinal tract: The stomach and intestines. [NIH]

Gavage: Feeding by a tube passed into the stomach; called also tube feeding. [NIH]

Gelatin: A product formed from skin, white connective tissue, or bone collagen. It is used as a protein food adjuvant, plasma substitute, hemostatic, suspending agent in pharmaceutical preparations, and in the manufacturing of capsules and suppositories. [NIH]

Gene: The functional and physical unit of heredity passed from parent to offspring. Genes are pieces of DNA, and most genes contain the information for making a specific protein. [NIH]

Genetics: The biological science that deals with the phenomena and mechanisms of heredity. [NIH]

Gestation: The period of development of the young in viviparous animals, from the time of fertilization of the ovum until birth. [EU]

Gestational: Psychosis attributable to or occurring during pregnancy. [NIH]

Gestational Age: Age of the conceptus. In humans, this may be assessed by medical history, physical examination, early immunologic pregnancy tests, radiography, ultrasonography, and amniotic fluid analysis. [NIH]

Gland: An organ that produces and releases one or more substances for use in the body. Some glands produce fluids that affect tissues or organs. Others produce hormones or participate in blood production. [NIH]

Glomerular: Pertaining to or of the nature of a glomerulus, especially a renal glomerulus. [EU]

Glomerulus: A tiny set of looping blood vessels in the nephron where blood is filtered in the kidney. [NIH]

Glucocorticoid: A compound that belongs to the family of compounds called corticosteroids (steroids). Glucocorticoids affect metabolism and have anti-inflammatory and immunosuppressive effects. They may be naturally produced (hormones) or synthetic (drugs). [NIH]

Glucose: D-Glucose. A primary source of energy for living organisms. It is naturally occurring and is found in fruits and other parts of plants in its free state. It is used therapeutically in fluid and nutrient replacement. [NIH]

Glucose Intolerance: A pathological state in which the fasting plasma glucose level is less than 140 mg per deciliter and the 30-, 60-, or 90-minute plasma glucose concentration following a glucose tolerance test exceeds 200 mg per deciliter. This condition is seen frequently in diabetes mellitus but also occurs with other diseases. [NIH]

Glutamate: Excitatory neurotransmitter of the brain. [NIH]

Glycoprotein: A protein that has sugar molecules attached to it. [NIH]

Glycoside: Any compound that contains a carbohydrate molecule (sugar), particularly any such natural product in plants, convertible, by hydrolytic cleavage, into sugar and a nonsugar component (aglycone), and named specifically for the sugar contained, as glucoside (glucose), pentoside (pentose), fructoside (fructose) etc. [EU]

Governing Board: The group in which legal authority is vested for the control of health-related institutions and organizations. [NIH]

Grafting: The operation of transfer of tissue from one site to another. [NIH]

Gram-negative: Losing the stain or decolorized by alcohol in Gram's method of staining, a primary characteristic of bacteria having a cell wall composed of a thin layer of peptidoglycan covered by an outer membrane of lipoprotein and lipopolysaccharide. [EU]

Guanylate Cyclase: An enzyme that catalyzes the conversion of GTP to 3',5'-cyclic GMP and pyrophosphate. It also acts on ITP and dGTP. (From Enzyme Nomenclature, 1992) EC 4.6.1.2. [NIH]

Handicap: A handicap occurs as a result of disability, but disability does not always constitute a handicap. A handicap may be said to exist when a disability causes a substantial and continuing reduction in a person's capacity to function socially and vocationally. [NIH]

Hazardous Waste: Waste products which, upon release into the atmosphere, water or soil, cause health risks to humans or animals through skin contact, inhalation or ingestion. Hazardous waste sites which contain hazardous waste substances go here. [NIH]

Headache: Pain in the cranial region that may occur as an isolated and benign symptom or as a manifestation of a wide variety of conditions including subarachnoid hemorrhage; craniocerebral trauma; central nervous system infections; intracranial hypertension; and other disorders. In general, recurrent headaches that are not associated with a primary disease process are referred to as headache disorders (e.g., migraine). [NIH]

Headache Disorders: Common conditions characterized by persistent or recurrent headaches. Headache syndrome classification systems may be based on etiology (e.g., vascular headache, post-traumatic headaches, etc.), temporal pattern (e.g., cluster headache, paroxysmal hemicrania, etc.), and precipitating factors (e.g., cough headache). [NIH]

Health Services: Services for the diagnosis and treatment of disease and the maintenance of health. [NIH]

Health Status: The level of health of the individual, group, or population as subjectively assessed by the individual or by more objective measures. [NIH]

Heart failure: Loss of pumping ability by the heart, often accompanied by fatigue, breathlessness, and excess fluid accumulation in body tissues. [NIH]

Heartbeat: One complete contraction of the heart. [NIH]

Hematopoiesis: The development and formation of various types of blood cells. [NIH]

Heme: The color-furnishing portion of hemoglobin. It is found free in tissues and as the prosthetic group in many hemeproteins. [NIH]

Hemiparesis: The weakness or paralysis affecting one side of the body. [NIH]

Hemodialysis: The use of a machine to clean wastes from the blood after the kidneys have

failed. The blood travels through tubes to a dialyzer, which removes wastes and extra fluid. The cleaned blood then flows through another set of tubes back into the body. [NIH]

Hemorrhage: Bleeding or escape of blood from a vessel. [NIH]

Hepatic: Refers to the liver. [NIH]

Heredity: 1. The genetic transmission of a particular quality or trait from parent to offspring. 2. The genetic constitution of an individual. [EU]

Hetastarch: A derivative of starch used as a plasma substitute in the treatment of hemorrhage. [NIH]

Histamine: 1H-Imidazole-4-ethanamine. A depressor amine derived by enzymatic decarboxylation of histidine. It is a powerful stimulant of gastric secretion, a constrictor of bronchial smooth muscle, a vasodilator, and also a centrally acting neurotransmitter. [NIH]

Histidine: An essential amino acid important in a number of metabolic processes. It is required for the production of histamine. [NIH]

Homeostasis: The processes whereby the internal environment of an organism tends to remain balanced and stable. [NIH]

Hormone: A substance in the body that regulates certain organs. Hormones such as gastrin help in breaking down food. Some hormones come from cells in the stomach and small intestine. [NIH]

Hormone therapy: Treatment of cancer by removing, blocking, or adding hormones. Also called endocrine therapy. [NIH]

Hybridomas: Cells artificially created by fusion of activated lymphocytes with neoplastic cells. The resulting hybrid cells are cloned and produce pure or "monoclonal" antibodies or T-cell products, identical to those produced by the immunologically competent parent, and continually grow and divide as the neoplastic parent. [NIH]

Hydration: Combining with water. [NIH]

Hydrocephalus: Excessive accumulation of cerebrospinal fluid within the cranium which may be associated with dilation of cerebral ventricles, intracranial hypertension; headache; lethargy; urinary incontinence; and ataxia (and in infants macrocephaly). This condition may be caused by obstruction of cerebrospinal fluid pathways due to neurologic abnormalities, intracranial hemorrhages; central nervous system infections; brain neoplasms; craniocerebral trauma; and other conditions. Impaired resorption of cerebrospinal fluid from the arachnoid villi results in a communicating form of hydrocephalus. Hydrocephalus ex-vacuo refers to ventricular dilation that occurs as a result of brain substance loss from cerebral infarction and other conditions. [NIH]

Hydrogen: The first chemical element in the periodic table. It has the atomic symbol H, atomic number 1, and atomic weight 1. It exists, under normal conditions, as a colorless, odorless, tasteless, diatomic gas. Hydrogen ions are protons. Besides the common H1 isotope, hydrogen exists as the stable isotope deuterium and the unstable, radioactive isotope tritium. [NIH]

Hydrophobic: Not readily absorbing water, or being adversely affected by water, as a hydrophobic colloid. [EU]

Hypercalcemia: Abnormally high level of calcium in the blood. [NIH]

Hyperkalaemia: Pathology: an abnormally high concentration of potassium in the blood. [EU]

Hyperreflexia: Exaggeration of reflexes. [EU]

Hyperstimulation: Excessive stimulation. [EU]

Hypertension: Persistently high arterial blood pressure. Currently accepted threshold levels are 140 mm Hg systolic and 90 mm Hg diastolic pressure. [NIH]

Hypoglycaemia: An abnormally diminished concentration of glucose in the blood, which may lead to tremulousness, cold sweat, piloerection, hypothermia, and headache, accompanied by irritability, confusion, hallucinations, bizarre behaviour, and ultimately, convulsions and coma. [EU]

Hypoglycemic: An orally active drug that produces a fall in blood glucose concentration. [NIH]

Hypotension: Abnormally low blood pressure. [NIH]

Hypotensive: Characterized by or causing diminished tension or pressure, as abnormally low blood pressure. [EU]

Hypothermia: Lower than normal body temperature, especially in warm-blooded animals; in man usually accidental or unintentional. [NIH]

Hypoxia: Reduction of oxygen supply to tissue below physiological levels despite adequate perfusion of the tissue by blood. [EU]

Hypoxic: Having too little oxygen. [NIH]

Ileostomy: Surgical creation of an external opening into the ileum for fecal diversion or drainage. Loop or tube procedures are most often employed. [NIH]

Iliac Artery: Either of two large arteries originating from the abdominal aorta; they supply blood to the pelvis, abdominal wall and legs. [NIH]

Immersion: The placing of a body or a part thereof into a liquid. [NIH]

Immune response: The activity of the immune system against foreign substances (antigens). [NIH]

Immune system: The organs, cells, and molecules responsible for the recognition and disposal of foreign ("non-self") material which enters the body. [NIH]

Immunologic: The ability of the antibody-forming system to recall a previous experience with an antigen and to respond to a second exposure with the prompt production of large amounts of antibody. [NIH]

Immunology: The study of the body's immune system. [NIH]

Immunomodulator: New type of drugs mainly using biotechnological methods. Treatment of cancer. [NIH]

Impairment: In the context of health experience, an impairment is any loss or abnormality of psychological, physiological, or anatomical structure or function. [NIH]

Impotence: The inability to perform sexual intercourse. [NIH]

In vitro: In the laboratory (outside the body). The opposite of in vivo (in the body). [NIH]

In vivo: In the body. The opposite of in vitro (outside the body or in the laboratory). [NIH]

Indomethacin: A non-steroidal anti-inflammatory agent (NSAID) that inhibits the enzyme cyclooxygenase necessary for the formation of prostaglandins and other autacoids. It also inhibits the motility of polymorphonuclear leukocytes. [NIH]

Induction: The act or process of inducing or causing to occur, especially the production of a specific morphogenetic effect in the developing embryo through the influence of evocators or organizers, or the production of anaesthesia or unconsciousness by use of appropriate agents. [EU]

Infancy: The period of complete dependency prior to the acquisition of competence in walking, talking, and self-feeding. [NIH]

Infarction: A pathological process consisting of a sudden insufficient blood supply to an area, which results in necrosis of that area. It is usually caused by a thrombus, an embolus, or a vascular torsion. [NIH]

Infection: 1. Invasion and multiplication of microorganisms in body tissues, which may be clinically unapparent or result in local cellular injury due to competitive metabolism, toxins, intracellular replication, or antigen-antibody response. The infection may remain localized, subclinical, and temporary if the body's defensive mechanisms are effective. A local infection may persist and spread by extension to become an acute, subacute, or chronic clinical infection or disease state. A local infection may also become systemic when the microorganisms gain access to the lymphatic or vascular system. 2. An infectious disease. [EU]

Inflammation: A pathological process characterized by injury or destruction of tissues caused by a variety of cytologic and chemical reactions. It is usually manifested by typical signs of pain, heat, redness, swelling, and loss of function. [NIH]

Informed Consent: Voluntary authorization, given to the physician by the patient, with full comprehension of the risks involved, for diagnostic or investigative procedures and medical and surgical treatment. [NIH]

Infusion: A method of putting fluids, including drugs, into the bloodstream. Also called intravenous infusion. [NIH]

Ingestion: Taking into the body by mouth [NIH]

Inhalation: The drawing of air or other substances into the lungs. [EU]

Initiation: Mutation induced by a chemical reactive substance causing cell changes; being a step in a carcinogenic process. [NIH]

Inorganic: Pertaining to substances not of organic origin. [EU]

Insecticides: Pesticides designed to control insects that are harmful to man. The insects may be directly harmful, as those acting as disease vectors, or indirectly harmful, as destroyers of crops, food products, or textile fabrics. [NIH]

Intensive Care: Advanced and highly specialized care provided to medical or surgical patients whose conditions are life-threatening and require comprehensive care and constant monitoring. It is usually administered in specially equipped units of a health care facility. [NIH]

Interleukin-1: A soluble factor produced by monocytes, macrophages, and other cells which activates T-lymphocytes and potentiates their response to mitogens or antigens. IL-1 consists of two distinct forms, IL-1 alpha and IL-1 beta which perform the same functions but are distinct proteins. The biological effects of IL-1 include the ability to replace macrophage requirements for T-cell activation. The factor is distinct from interleukin-2. [NIH]

Interleukin-2: Chemical mediator produced by activated T lymphocytes and which regulates the proliferation of T cells, as well as playing a role in the regulation of NK cell activity. [NIH]

Interleukin-6: Factor that stimulates the growth and differentiation of human B-cells and is also a growth factor for hybridomas and plasmacytomas. It is produced by many different cells including T-cells, monocytes, and fibroblasts. [NIH]

Intermittent: Occurring at separated intervals; having periods of cessation of activity. [EU]

Interstitial: Pertaining to or situated between parts or in the interspaces of a tissue. [EU]

Intestinal: Having to do with the intestines. [NIH]

Intestine: A long, tube-shaped organ in the abdomen that completes the process of digestion. There is both a large intestine and a small intestine. Also called the bowel. [NIH]

Intoxication: Poisoning, the state of being poisoned. [EU]

Intracellular: Inside a cell. [NIH]

Intracranial Hypertension: Increased pressure within the cranial vault. This may result from several conditions, including hydrocephalus; brain edema; intracranial masses; severe systemic hypertension; pseudotumor cerebri; and other disorders. [NIH]

Intracranial Pressure: Pressure within the cranial cavity. It is influenced by brain mass, the circulatory system, CSF dynamics, and skull rigidity. [NIH]

Intramuscular: IM. Within or into muscle. [NIH]

Intravenous: IV. Into a vein. [NIH]

Intrinsic: Situated entirely within or pertaining exclusively to a part. [EU]

Intubation: Introduction of a tube into a hollow organ to restore or maintain patency if obstructed. It is differentiated from catheterization in that the insertion of a catheter is usually performed for the introducing or withdrawing of fluids from the body. [NIH]

Ionization: 1. Any process by which a neutral atom gains or loses electrons, thus acquiring a net charge, as the dissociation of a substance in solution into ions or ion production by the passage of radioactive particles. 2. Iontophoresis. [EU]

Ionizing: Radiation comprising charged particles, e. g. electrons, protons, alpha-particles, etc., having sufficient kinetic energy to produce ionization by collision. [NIH]

Ions: An atom or group of atoms that have a positive or negative electric charge due to a gain (negative charge) or loss (positive charge) of one or more electrons. Atoms with a positive charge are known as cations; those with a negative charge are anions. [NIH]

Ischemia: Deficiency of blood in a part, due to functional constriction or actual obstruction of a blood vessel. [EU]

Ischemic stroke: A condition in which the blood supply to part of the brain is cut off. Also called "plug-type" strokes. Blocked arteries starve areas of the brain controlling sight, speech, sensation, and movement so that these functions are partially or completely lost. Ischemic stroke is the most common type of stroke, accounting for 80 percent of all strokes. Most ischemic strokes are caused by a blood clot called a thrombus, which blocks blood flow in the arteries feeding the brain, usually the carotid artery in the neck, the major vessel bringing blood to the brain. When it becomes blocked, the risk of stroke is very high. [NIH]

Isoenzymes: One of various structurally related forms of an enzyme, each having the same mechanism but with differing chemical, physical, or immunological characteristics. [NIH]

Kanamycin: Antibiotic complex produced by Streptomyces kanamyceticus from Japanese soil. Comprises 3 components: kanamycin A, the major component, and kanamycins B and C, the minor components. [NIH]

Kb: A measure of the length of DNA fragments, 1 Kb = 1000 base pairs. The largest DNA fragments are up to 50 kilobases long. [NIH]

Ketorolac: A drug that belongs to a family of drugs called nonsteroidal anti-inflammatory agents. It is being studied in cancer prevention. [NIH]

Laceration: 1. The act of tearing. 2. A torn, ragged, mangled wound. [EU]

Lactulose: A mild laxative. [NIH]

Large Intestine: The part of the intestine that goes from the cecum to the rectum. The large intestine absorbs water from stool and changes it from a liquid to a solid form. The large intestine is 5 feet long and includes the appendix, cecum, colon, and rectum. Also called colon. [NIH]

Laxative: An agent that acts to promote evacuation of the bowel; a cathartic or purgative. [EU]

Lesion: An area of abnormal tissue change. [NIH]

Lethal: Deadly, fatal. [EU]

Leukocytes: White blood cells. These include granular leukocytes (basophils, eosinophils, and neutrophils) as well as non-granular leukocytes (lymphocytes and monocytes). [NIH]

Lidocaine: A local anesthetic and cardiac depressant used as an antiarrhythmia agent. Its actions are more intense and its effects more prolonged than those of procaine but its duration of action is shorter than that of bupivacaine or prilocaine. [NIH]

Ligaments: Shiny, flexible bands of fibrous tissue connecting together articular extremities of bones. They are pliant, tough, and inextensile. [NIH]

Ligands: A RNA simulation method developed by the MIT. [NIH]

Lipophilic: Having an affinity for fat; pertaining to or characterized by lipophilia. [EU]

Lithium: An element in the alkali metals family. It has the atomic symbol Li, atomic number 3, and atomic weight 6.94. Salts of lithium are used in treating manic-depressive disorders. [NIH]

Lithium Chloride: A salt of lithium that has been used experimentally as an immunomodulator. [NIH]

Liver: A large, glandular organ located in the upper abdomen. The liver cleanses the blood and aids in digestion by secreting bile. [NIH]

Loading dose: A quantity higher than the average or maintenance dose, used at the initiation of therapy to rapidly establish a desired level of the drug [EU]

Lobe: A portion of an organ such as the liver, lung, breast, or brain. [NIH]

Lobule: A small lobe or subdivision of a lobe. [NIH]

Localized: Cancer which has not metastasized yet. [NIH]

Lymph: The almost colorless fluid that travels through the lymphatic system and carries cells that help fight infection and disease. [NIH]

Lymph node: A rounded mass of lymphatic tissue that is surrounded by a capsule of connective tissue. Also known as a lymph gland. Lymph nodes are spread out along lymphatic vessels and contain many lymphocytes, which filter the lymphatic fluid (lymph). [NIH]

Lymphatic: The tissues and organs, including the bone marrow, spleen, thymus, and lymph nodes, that produce and store cells that fight infection and disease. [NIH]

Lymphocytes: White blood cells formed in the body's lymphoid tissue. The nucleus is round or ovoid with coarse, irregularly clumped chromatin while the cytoplasm is typically pale blue with azurophilic (if any) granules. Most lymphocytes can be classified as either T or B (with subpopulations of each); those with characteristics of neither major class are called null cells. [NIH]

Lytic: 1. Pertaining to lysis or to a lysin. 2. Producing lysis. [EU]

Macronutrients: Nutrients in the diet that are the key sources of energy, namely protein, fat, and carbohydrates. [NIH]

Macrophage: A type of white blood cell that surrounds and kills microorganisms, removes dead cells, and stimulates the action of other immune system cells. [NIH]

Magnesium Chloride: Magnesium chloride. An inorganic compound consisting of one magnesium and two chloride ions. The compound is used in medicine as a source of

magnesium ions, which are essential for many cellular activities. It has also been used as a cathartic and in alloys. [NIH]

Magnesium Hydroxide: Magnesium hydroxide (Mg(OH)2). An inorganic compound that occurs in nature as the mineral brucite. It acts as an antacid with cathartic effects. [NIH]

Magnesium Oxide: Magnesium oxide (MgO). An inorganic compound that occurs in nature as the mineral periclase. In aqueous media combines quickly with water to form magnesium hydroxide. It is used as an antacid and mild laxative and has many nonmedicinal uses. [NIH]

Manic: Affected with mania. [EU]

Maternal Mortality: Maternal deaths resulting from complications of pregnancy and childbirth in a given population. [NIH]

Matrix metalloproteinase: A member of a group of enzymes that can break down proteins, such as collagen, that are normally found in the spaces between cells in tissues (i.e., extracellular matrix proteins). Because these enzymes need zinc or calcium atoms to work properly, they are called metalloproteinases. Matrix metalloproteinases are involved in wound healing, angiogenesis, and tumor cell metastasis. [NIH]

Mechanical ventilation: Use of a machine called a ventilator or respirator to improve the exchange of air between the lungs and the atmosphere. [NIH]

Meconium: The thick green-to-black mucilaginous material found in the intestines of a full-term fetus. It consists of secretions of the intestinal glands, bile pigments, fatty acids, amniotic fluid, and intrauterine debris. It constitutes the first stools passed by a newborn. [NIH]

Meconium Aspiration: Syndrome caused by sucking of thick meconium into the lungs, usually by term or post-term infants (often small for gestational age) either in utero or with first breath. The resultant small airway obstruction may produce respiratory distress, tachypnea, cyanosis, pneumothorax, and/or pneumomediastinum. [NIH]

Mediate: Indirect; accomplished by the aid of an intervening medium. [EU]

Medicament: A medicinal substance or agent. [EU]

MEDLINE: An online database of MEDLARS, the computerized bibliographic Medical Literature Analysis and Retrieval System of the National Library of Medicine. [NIH]

Membrane: A very thin layer of tissue that covers a surface. [NIH]

Memory: Complex mental function having four distinct phases: (1) memorizing or learning, (2) retention, (3) recall, and (4) recognition. Clinically, it is usually subdivided into immediate, recent, and remote memory. [NIH]

Mental: Pertaining to the mind; psychic. 2. (L. mentum chin) pertaining to the chin. [EU]

Mental Retardation: Refers to sub-average general intellectual functioning which originated during the developmental period and is associated with impairment in adaptive behavior. [NIH]

Mesoderm: The middle germ layer of the embryo. [NIH]

Meta-Analysis: A quantitative method of combining the results of independent studies (usually drawn from the published literature) and synthesizing summaries and conclusions which may be used to evaluate therapeutic effectiveness, plan new studies, etc., with application chiefly in the areas of research and medicine. [NIH]

Metabolite: Any substance produced by metabolism or by a metabolic process. [EU]

Metastasis: The spread of cancer from one part of the body to another. Tumors formed from cells that have spread are called "secondary tumors" and contain cells that are like those in the original (primary) tumor. The plural is metastases. [NIH]

Methanol: A colorless, flammable liquid used in the manufacture of formaldehyde and acetic acid, in chemical synthesis, antifreeze, and as a solvent. Ingestion of methanol is toxic and may cause blindness. [NIH]

Methionine: A sulfur containing essential amino acid that is important in many body functions. It is a chelating agent for heavy metals. [NIH]

Methylcellulose: Methylester of cellulose. Methylcellulose is used as an emulsifying and suspending agent in cosmetics, pharmaceutics and the chemical industry. It is used therapeutically as a bulk laxative. [NIH]

Metoclopramide: A dopamine D2 antagonist that is used as an antiemetic. [NIH]

MI: Myocardial infarction. Gross necrosis of the myocardium as a result of interruption of the blood supply to the area; it is almost always caused by atherosclerosis of the coronary arteries, upon which coronary thrombosis is usually superimposed. [NIH]

Micelle: A colloid particle formed by an aggregation of small molecules. [EU]

Microbe: An organism which cannot be observed with the naked eye; e. g. unicellular animals, lower algae, lower fungi, bacteria. [NIH]

Microdialysis: A technique for measuring extracellular concentrations of substances in tissues, usually in vivo, by means of a small probe equipped with a semipermeable membrane. Substances may also be introduced into the extracellular space through the membrane. [NIH]

Micturition: The passage of urine; urination. [EU]

Mineral Oil: A mixture of liquid hydrocarbons obtained from petroleum. It is used as laxative, lubricant, ointment base, and emollient. [NIH]

Mineralization: The action of mineralizing; the state of being mineralized. [EU]

Modeling: A treatment procedure whereby the therapist presents the target behavior which the learner is to imitate and make part of his repertoire. [NIH]

Modification: A change in an organism, or in a process in an organism, that is acquired from its own activity or environment. [NIH]

Molecular: Of, pertaining to, or composed of molecules : a very small mass of matter. [EU]

Molecule: A chemical made up of two or more atoms. The atoms in a molecule can be the same (an oxygen molecule has two oxygen atoms) or different (a water molecule has two hydrogen atoms and one oxygen atom). Biological molecules, such as proteins and DNA, can be made up of many thousands of atoms. [NIH]

Monocytes: Large, phagocytic mononuclear leukocytes produced in the vertebrate bone marrow and released into the blood; contain a large, oval or somewhat indented nucleus surrounded by voluminous cytoplasm and numerous organelles. [NIH]

Mononuclear: A cell with one nucleus. [NIH]

Morphine: The principal alkaloid in opium and the prototype opiate analgesic and narcotic. Morphine has widespread effects in the central nervous system and on smooth muscle. [NIH]

Motility: The ability to move spontaneously. [EU]

Motor Activity: The physical activity of an organism as a behavioral phenomenon. [NIH]

Mucilaginous: Pertaining to or secreting mucus. [NIH]

Muscle relaxant: An agent that specifically aids in reducing muscle tension, as those acting at the polysynaptic neurons of motor nerves (e.g. meprobamate) or at the myoneural junction (curare and related compounds). [EU]

Muscle Relaxation: That phase of a muscle twitch during which a muscle returns to a

resting position. [NIH]

Muscle Spindles: Mechanoreceptors found between skeletal muscle fibers. Muscle spindles are arranged in parallel with muscle fibers and respond to the passive stretch of the muscle, but cease to discharge if the muscle contracts isotonically, thus signaling muscle length. The muscle spindles are the receptors responsible for the stretch or myotactic reflex. [NIH]

Mutagenic: Inducing genetic mutation. [EU]

Mydriatic: 1. Dilating the pupil. 2. Any drug that dilates the pupil. [EU]

Myocardial infarction: Gross necrosis of the myocardium as a result of interruption of the blood supply to the area; it is almost always caused by atherosclerosis of the coronary arteries, upon which coronary thrombosis is usually superimposed. [NIH]

Myocardial Ischemia: A disorder of cardiac function caused by insufficient blood flow to the muscle tissue of the heart. The decreased blood flow may be due to narrowing of the coronary arteries (coronary arteriosclerosis), to obstruction by a thrombus (coronary thrombosis), or less commonly, to diffuse narrowing of arterioles and other small vessels within the heart. Severe interruption of the blood supply to the myocardial tissue may result in necrosis of cardiac muscle (myocardial infarction). [NIH]

Myocardium: The muscle tissue of the heart composed of striated, involuntary muscle known as cardiac muscle. [NIH]

Myoglobin: A conjugated protein which is the oxygen-transporting pigment of muscle. It is made up of one globin polypeptide chain and one heme group. [NIH]

Myopathy: Any disease of a muscle. [EU]

Myosin: Chief protein in muscle and the main constituent of the thick filaments of muscle fibers. In conjunction with actin, it is responsible for the contraction and relaxation of muscles. [NIH]

Myotonia: Prolonged failure of muscle relaxation after contraction. This may occur after voluntary contractions, muscle percussion, or electrical stimulation of the muscle. Myotonia is a characteristic feature of myotonic disorders. [NIH]

Narcotic: 1. Pertaining to or producing narcosis. 2. An agent that produces insensibility or stupor, applied especially to the opioids, i.e. to any natural or synthetic drug that has morphine-like actions. [EU]

Nausea: An unpleasant sensation in the stomach usually accompanied by the urge to vomit. Common causes are early pregnancy, sea and motion sickness, emotional stress, intense pain, food poisoning, and various enteroviruses. [NIH]

NCI: National Cancer Institute. NCI, part of the National Institutes of Health of the United States Department of Health and Human Services, is the federal government's principal agency for cancer research. NCI conducts, coordinates, and funds cancer research, training, health information dissemination, and other programs with respect to the cause, diagnosis, prevention, and treatment of cancer. Access the NCI Web site at http://cancer.gov. [NIH]

Nebramycin: A complex of antibiotic substances produced by Streptomyces tenebrarius. [NIH]

Necrosis: A pathological process caused by the progressive degradative action of enzymes that is generally associated with severe cellular trauma. It is characterized by mitochondrial swelling, nuclear flocculation, uncontrolled cell lysis, and ultimately cell death. [NIH]

Necrotizing Enterocolitis: A condition in which part of the tissue in the intestines is destroyed. Occurs mainly in under-weight newborn babies. A temporary ileostomy may be necessary. [NIH]

Neonatal: Pertaining to the first four weeks after birth. [EU]

Neonatology: A subspecialty of pediatrics concerned with the newborn infant. [NIH]

Nerve: A cordlike structure of nervous tissue that connects parts of the nervous system with other tissues of the body and conveys nervous impulses to, or away from, these tissues. [NIH]

Nervous System: The entire nerve apparatus composed of the brain, spinal cord, nerves and ganglia. [NIH]

Neurobehavioral Manifestations: Signs and symptoms of higher cortical dysfunction caused by organic conditions. These include certain behavioral alterations and impairments of skills involved in the acquisition, processing, and utilization of knowledge or information. [NIH]

Neurologic: Having to do with nerves or the nervous system. [NIH]

Neuromuscular: Pertaining to muscles and nerves. [EU]

Neuromuscular Blockade: The intentional interruption of transmission at the neuromuscular junction by external agents, usually neuromuscular blocking agents. It is distinguished from nerve block in which nerve conduction is interrupted rather than neuromuscular transmission. Neuromuscular blockade is commonly used to produce muscle relaxation as an adjunct to anesthesia during surgery and other medical procedures. It is also often used as an experimental manipulation in basic research. It is not strictly speaking anesthesia but is grouped here with anesthetic techniques. The failure of neuromuscular transmission as a result of pathological processes is not included here. [NIH]

Neuromuscular Junction: The synapse between a neuron and a muscle. [NIH]

Neuronal: Pertaining to a neuron or neurons (= conducting cells of the nervous system). [EU]

Neurons: The basic cellular units of nervous tissue. Each neuron consists of a body, an axon, and dendrites. Their purpose is to receive, conduct, and transmit impulses in the nervous system. [NIH]

Neuropeptide: A member of a class of protein-like molecules made in the brain. Neuropeptides consist of short chains of amino acids, with some functioning as neurotransmitters and some functioning as hormones. [NIH]

Neurotoxicity: The tendency of some treatments to cause damage to the nervous system. [NIH]

Neurotransmitter: Any of a group of substances that are released on excitation from the axon terminal of a presynaptic neuron of the central or peripheral nervous system and travel across the synaptic cleft to either excite or inhibit the target cell. Among the many substances that have the properties of a neurotransmitter are acetylcholine, norepinephrine, epinephrine, dopamine, glycine, y-aminobutyrate, glutamic acid, substance P, enkephalins, endorphins, and serotonin. [EU]

Neutralization: An act or process of neutralizing. [EU]

Nicardipine: 1,4-Dihydro-2,6-dimethyl-4-(3-nitrophenyl) methyl 2-(methyl(phenylmethyl)amino)-3,5-pyridinecarboxylic acid ethyl ester. A potent calcium channel blockader with marked vasodilator action. It has antihypertensive properties and is effective in the treatment of angina and coronary spasms without showing cardiodepressant effects. It has also been used in the treatment of asthma and enhances the action of specific antineoplastic agents. [NIH]

Nifedipine: A potent vasodilator agent with calcium antagonistic action. It is a useful anti-anginal agent that also lowers blood pressure. The use of nifedipine as a tocolytic is being investigated. [NIH]

Nimodipine: A calcium channel blockader with preferential cerebrovascular activity. It has

marked cerebrovascular dilating effects and lowers blood pressure. [NIH]

Nitric Oxide: A free radical gas produced endogenously by a variety of mammalian cells. It is synthesized from arginine by a complex reaction, catalyzed by nitric oxide synthase. Nitric oxide is endothelium-derived relaxing factor. It is released by the vascular endothelium and mediates the relaxation induced by some vasodilators such as acetylcholine and bradykinin. It also inhibits platelet aggregation, induces disaggregation of aggregated platelets, and inhibits platelet adhesion to the vascular endothelium. Nitric oxide activates cytosolic guanylate cyclase and thus elevates intracellular levels of cyclic GMP. [NIH]

Nitrogen: An element with the atomic symbol N, atomic number 7, and atomic weight 14. Nitrogen exists as a diatomic gas and makes up about 78% of the earth's atmosphere by volume. It is a constituent of proteins and nucleic acids and found in all living cells. [NIH]

Nitroglycerin: A highly volatile organic nitrate that acts as a dilator of arterial and venous smooth muscle and is used in the treatment of angina. It provides relief through improvement of the balance between myocardial oxygen supply and demand. Although total coronary blood flow is not increased, there is redistribution of blood flow in the heart when partial occlusion of coronary circulation is effected. [NIH]

Normotensive: 1. Characterized by normal tone, tension, or pressure, as by normal blood pressure. 2. A person with normal blood pressure. [EU]

Nucleic acid: Either of two types of macromolecule (DNA or RNA) formed by polymerization of nucleotides. Nucleic acids are found in all living cells and contain the information (genetic code) for the transfer of genetic information from one generation to the next. [NIH]

Oedema: The presence of abnormally large amounts of fluid in the intercellular tissue spaces of the body; usually applied to demonstrable accumulation of excessive fluid in the subcutaneous tissues. Edema may be localized, due to venous or lymphatic obstruction or to increased vascular permeability, or it may be systemic due to heart failure or renal disease. Collections of edema fluid are designated according to the site, e.g. ascites (peritoneal cavity), hydrothorax (pleural cavity), and hydropericardium (pericardial sac). Massive generalized edema is called anasarca. [EU]

Ointments: Semisolid preparations used topically for protective emollient effects or as a vehicle for local administration of medications. Ointment bases are various mixtures of fats, waxes, animal and plant oils and solid and liquid hydrocarbons. [NIH]

Oliguria: Clinical manifestation of the urinary system consisting of a decrease in the amount of urine secreted. [NIH]

On-line: A sexually-reproducing population derived from a common parentage. [NIH]

Opiate: A remedy containing or derived from opium; also any drug that induces sleep. [EU]

Opium: The air-dried exudate from the unripe seed capsule of the opium poppy, Papaver somniferum, or its variant, P. album. It contains a number of alkaloids, but only a few - morphine, codeine, and papaverine - have clinical significance. Opium has been used as an analgesic, antitussive, antidiarrheal, and antispasmodic. [NIH]

Opsin: A protein formed, together with retinene, by the chemical breakdown of meta-rhodopsin. [NIH]

Osmosis: Tendency of fluids (e.g., water) to move from the less concentrated to the more concentrated side of a semipermeable membrane. [NIH]

Osmotic: Pertaining to or of the nature of osmosis (= the passage of pure solvent from a solution of lesser to one of greater solute concentration when the two solutions are separated

by a membrane which selectively prevents the passage of solute molecules, but is permeable to the solvent). [EU]

Ossification: The formation of bone or of a bony substance; the conversion of fibrous tissue or of cartilage into bone or a bony substance. [EU]

Osteoporosis: Reduction of bone mass without alteration in the composition of bone, leading to fractures. Primary osteoporosis can be of two major types: postmenopausal osteoporosis and age-related (or senile) osteoporosis. [NIH]

Ototoxic: Having a deleterious effect upon the eighth nerve, or upon the organs of hearing and balance. [EU]

Ouabain: A cardioactive glycoside consisting of rhamnose and ouabagenin, obtained from the seeds of Strophanthus gratus and other plants of the Apocynaceae; used like digitalis. It is commonly used in cell biological studies as an inhibitor of the NA(+)-K(+)-exchanging atpase. [NIH]

Ovaries: The pair of female reproductive glands in which the ova, or eggs, are formed. The ovaries are located in the pelvis, one on each side of the uterus. [NIH]

Overdose: An accidental or deliberate dose of a medication or street drug that is in excess of what is normally used. [NIH]

Ovum: A female germ cell extruded from the ovary at ovulation. [NIH]

Ovum Implantation: Endometrial implantation of the blastocyst. [NIH]

Oxidation: The act of oxidizing or state of being oxidized. Chemically it consists in the increase of positive charges on an atom or the loss of negative charges. Most biological oxidations are accomplished by the removal of a pair of hydrogen atoms (dehydrogenation) from a molecule. Such oxidations must be accompanied by reduction of an acceptor molecule. Univalent o. indicates loss of one electron; divalent o., the loss of two electrons. [EU]

Oxides: Binary compounds of oxygen containing the anion O(2-). The anion combines with metals to form alkaline oxides and non-metals to form acidic oxides. [NIH]

Oxytocin: A nonapeptide posterior pituitary hormone that causes uterine contractions and stimulates lactation. [NIH]

Palliative: 1. Affording relief, but not cure. 2. An alleviating medicine. [EU]

Pancreas: A mixed exocrine and endocrine gland situated transversely across the posterior abdominal wall in the epigastric and hypochondriac regions. The endocrine portion is comprised of the Islets of Langerhans, while the exocrine portion is a compound acinar gland that secretes digestive enzymes. [NIH]

Pancreatic: Having to do with the pancreas. [NIH]

Pancreatitis: Acute or chronic inflammation of the pancreas, which may be asymptomatic or symptomatic, and which is due to autodigestion of a pancreatic tissue by its own enzymes. It is caused most often by alcoholism or biliary tract disease; less commonly it may be associated with hyperlipaemia, hyperparathyroidism, abdominal trauma (accidental or operative injury), vasculitis, or uraemia. [EU]

Paralysis: Loss of ability to move all or part of the body. [NIH]

Paramedic: An emergency medical technician (EMT) who received further training for the delivery of some aspects of advanced life support (ALS) care. [NIH]

Parathyroid: 1. Situated beside the thyroid gland. 2. One of the parathyroid glands. 3. A sterile preparation of the water-soluble principle(s) of the parathyroid glands, ad-ministered parenterally as an antihypocalcaemic, especially in the treatment of acute

hypoparathyroidism with tetany. [EU]

Parathyroid Glands: Two small paired endocrine glands in the region of the thyroid gland. They secrete parathyroid hormone and are concerned with the metabolism of calcium and phosphorus. [NIH]

Parathyroid hormone: A substance made by the parathyroid gland that helps the body store and use calcium. Also called parathormone, parathyrin, or PTH. [NIH]

Parenteral: Not through the alimentary canal but rather by injection through some other route, as subcutaneous, intramuscular, intraorbital, intracapsular, intraspinal, intrasternal, intravenous, etc. [EU]

Paroxysmal: Recurring in paroxysms (= spasms or seizures). [EU]

Particle: A tiny mass of material. [EU]

Parturition: The act or process of given birth to a child. [EU]

Pathologic: 1. Indicative of or caused by a morbid condition. 2. Pertaining to pathology (= branch of medicine that treats the essential nature of the disease, especially the structural and functional changes in tissues and organs of the body caused by the disease). [EU]

Pediatrics: A medical specialty concerned with maintaining health and providing medical care to children from birth to adolescence. [NIH]

Perfusion: Bathing an organ or tissue with a fluid. In regional perfusion, a specific area of the body (usually an arm or a leg) receives high doses of anticancer drugs through a blood vessel. Such a procedure is performed to treat cancer that has not spread. [NIH]

Perinatal: Pertaining to or occurring in the period shortly before and after birth; variously defined as beginning with completion of the twentieth to twenty-eighth week of gestation and ending 7 to 28 days after birth. [EU]

Peripheral Vascular Disease: Disease in the large blood vessels of the arms, legs, and feet. People who have had diabetes for a long time may get this because major blood vessels in their arms, legs, and feet are blocked and these limbs do not receive enough blood. The signs of PVD are aching pains in the arms, legs, and feet (especially when walking) and foot sores that heal slowly. Although people with diabetes cannot always avoid PVD, doctors say they have a better chance of avoiding it if they take good care of their feet, do not smoke, and keep both their blood pressure and diabetes under good control. [NIH]

Periventricular Leukomalacia: Rare form of epilepsy. [NIH]

Petrolatum: A colloidal system of semisolid hydrocarbons obtained from petroleum. It is used as an ointment base, topical protectant, and lubricant. [NIH]

Petroleum: Naturally occurring complex liquid hydrocarbons which, after distillation, yield combustible fuels, petrochemicals, and lubricants. [NIH]

Pharmaceutical Preparations: Drugs intended for human or veterinary use, presented in their finished dosage form. Included here are materials used in the preparation and/or formulation of the finished dosage form. [NIH]

Pharmacokinetic: The mathematical analysis of the time courses of absorption, distribution, and elimination of drugs. [NIH]

Pharmacologic: Pertaining to pharmacology or to the properties and reactions of drugs. [EU]

Pharmacotherapy: A regimen of using appetite suppressant medications to manage obesity by decreasing appetite or increasing the feeling of satiety. These medications decrease appetite by increasing serotonin or catecholamine—two brain chemicals that affect mood and appetite. [NIH]

Phenolphthalein: An acid-base indicator which is colorless in acid solution, but turns pink

to red as the solution becomes alkaline. It is used medicinally as a cathartic. [NIH]

Phentolamine: A nonselective alpha-adrenergic antagonist. It is used in the treatment of hypertension and hypertensive emergencies, pheochromocytoma, vasospasm of Raynaud's disease and frostbite, clonidine withdrawal syndrome, impotence, and peripheral vascular disease. [NIH]

Phenytoin: An anticonvulsant that is used in a wide variety of seizures. It is also an anti-arrhythmic and a muscle relaxant. The mechanism of therapeutic action is not clear, although several cellular actions have been described including effects on ion channels, active transport, and general membrane stabilization. The mechanism of its muscle relaxant effect appears to involve a reduction in the sensitivity of muscle spindles to stretch. Phenytoin has been proposed for several other therapeutic uses, but its use has been limited by its many adverse effects and interactions with other drugs. [NIH]

Phosphates: Inorganic salts of phosphoric acid. [NIH]

Phosphorous: Having to do with or containing the element phosphorus. [NIH]

Phosphorus: A non-metallic element that is found in the blood, muscles, nevers, bones, and teeth, and is a component of adenosine triphosphate (ATP; the primary energy source for the body's cells.) [NIH]

Physical Examination: Systematic and thorough inspection of the patient for physical signs of disease or abnormality. [NIH]

Physiology: The science that deals with the life processes and functions of organismus, their cells, tissues, and organs. [NIH]

Phytoplankton: Minute plant organisms which live in practically all natural waters. [NIH]

Pigment: A substance that gives color to tissue. Pigments are responsible for the color of skin, eyes, and hair. [NIH]

Pilot study: The initial study examining a new method or treatment. [NIH]

Placenta: A highly vascular fetal organ through which the fetus absorbs oxygen and other nutrients and excretes carbon dioxide and other wastes. It begins to form about the eighth day of gestation when the blastocyst adheres to the decidua. [NIH]

Plants: Multicellular, eukaryotic life forms of the kingdom Plantae. They are characterized by a mainly photosynthetic mode of nutrition; essentially unlimited growth at localized regions of cell divisions (meristems); cellulose within cells providing rigidity; the absence of organs of locomotion; absense of nervous and sensory systems; and an alteration of haploid and diploid generations. [NIH]

Plasma: The clear, yellowish, fluid part of the blood that carries the blood cells. The proteins that form blood clots are in plasma. [NIH]

Plasmin: A product of the lysis of plasminogen (profibrinolysin) by plasminogen activators. It is composed of two polypeptide chains, light (B) and heavy (A), with a molecular weight of 75,000. It is the major proteolytic enzyme involved in blood clot retraction or the lysis of fibrin and quickly inactivated by antiplasmins. EC 3.4.21.7. [NIH]

Plasminogen: Precursor of fibrinolysin (plasmin). It is a single-chain beta-globulin of molecular weight 80-90,000 found mostly in association with fibrinogen in plasma; plasminogen activators change it to fibrinolysin. It is used in wound debriding and has been investigated as a thrombolytic agent. [NIH]

Plasminogen Activators: A heterogeneous group of proteolytic enzymes that convert plasminogen to plasmin. They are concentrated in the lysosomes of most cells and in the vascular endothelium, particularly in the vessels of the microcirculation. EC 3.4.21.-. [NIH]

Platelet Aggregation: The attachment of platelets to one another. This clumping together can be induced by a number of agents (e.g., thrombin, collagen) and is part of the mechanism leading to the formation of a thrombus. [NIH]

Platelets: A type of blood cell that helps prevent bleeding by causing blood clots to form. Also called thrombocytes. [NIH]

Platinum: Platinum. A heavy, soft, whitish metal, resembling tin, atomic number 78, atomic weight 195.09, symbol Pt. (From Dorland, 28th ed) It is used in manufacturing equipment for laboratory and industrial use. It occurs as a black powder (platinum black) and as a spongy substance (spongy platinum) and may have been known in Pliny's time as "alutiae". [NIH]

Pneumonia: Inflammation of the lungs. [NIH]

Pneumothorax: Accumulation of air or gas in the space between the lung and chest wall, resulting in partial or complete collapse of the lung. [NIH]

Poisoning: A condition or physical state produced by the ingestion, injection or inhalation of, or exposure to a deleterious agent. [NIH]

Polyethylene: A vinyl polymer made from ethylene. It can be branched or linear. Branched or low-density polyethylene is tough and pliable but not to the same degree as linear polyethylene. Linear or high-density polyethylene has a greater hardness and tensile strength. Polyethylene is used in a variety of products, including implants and prostheses. [NIH]

Polymers: Compounds formed by the joining of smaller, usually repeating, units linked by covalent bonds. These compounds often form large macromolecules (e.g., polypeptides, proteins, plastics). [NIH]

Polymorphism: The occurrence together of two or more distinct forms in the same population. [NIH]

Polypeptide: A peptide which on hydrolysis yields more than two amino acids; called tripeptides, tetrapeptides, etc. according to the number of amino acids contained. [EU]

Polysaccharide: A type of carbohydrate. It contains sugar molecules that are linked together chemically. [NIH]

Postmenopausal: Refers to the time after menopause. Menopause is the time in a woman's life when menstrual periods stop permanently; also called "change of life." [NIH]

Postnatal: Occurring after birth, with reference to the newborn. [EU]

Postoperative: After surgery. [NIH]

Post-traumatic: Occurring as a result of or after injury. [EU]

Potassium: An element that is in the alkali group of metals. It has an atomic symbol K, atomic number 19, and atomic weight 39.10. It is the chief cation in the intracellular fluid of muscle and other cells. Potassium ion is a strong electrolyte and it plays a significant role in the regulation of fluid volume and maintenance of the water-electrolyte balance. [NIH]

Potassium Chloride: Potassium chloride. A white crystal or crystalline powder used as an electrolyte replenisher, in the treatment of hypokalemia, in buffer solutions, and in fertilizers and explosives. [NIH]

Potentiates: A degree of synergism which causes the exposure of the organism to a harmful substance to worsen a disease already contracted. [NIH]

Practice Guidelines: Directions or principles presenting current or future rules of policy for the health care practitioner to assist him in patient care decisions regarding diagnosis, therapy, or related clinical circumstances. The guidelines may be developed by government

agencies at any level, institutions, professional societies, governing boards, or by the convening of expert panels. The guidelines form a basis for the evaluation of all aspects of health care and delivery. [NIH]

Precipitation: The act or process of precipitating. [EU]

Precursor: Something that precedes. In biological processes, a substance from which another, usually more active or mature substance is formed. In clinical medicine, a sign or symptom that heralds another. [EU]

Preeclampsia: A toxaemia of late pregnancy characterized by hypertension, edema, and proteinuria, when convulsions and coma are associated, it is called eclampsia. [EU]

Pre-Eclampsia: Development of hypertension with proteinuria, edema, or both, due to pregnancy or the influence of a recent pregnancy. It occurs after the 20th week of gestation, but it may develop before this time in the presence of trophoblastic disease. [NIH]

Pre-eclamptic: A syndrome characterized by hypertension, albuminuria, and generalized oedema, occurring only in pregnancy. [NIH]

Pregnancy Tests: Tests to determine whether or not an individual is pregnant. [NIH]

Primary endpoint: The main result that is measured at the end of a study to see if a given treatment worked (e.g., the number of deaths or the difference in survival between the treatment group and the control group). What the primary endpoint will be is decided before the study begins. [NIH]

Probe: An instrument used in exploring cavities, or in the detection and dilatation of strictures, or in demonstrating the potency of channels; an elongated instrument for exploring or sounding body cavities. [NIH]

Procaine: A local anesthetic of the ester type that has a slow onset and a short duration of action. It is mainly used for infiltration anesthesia, peripheral nerve block, and spinal block. (From Martindale, The Extra Pharmacopoeia, 30th ed, p1016). [NIH]

Progeny: The offspring produced in any generation. [NIH]

Progression: Increase in the size of a tumor or spread of cancer in the body. [NIH]

Prophylaxis: An attempt to prevent disease. [NIH]

Propofol: A widely used anesthetic. [NIH]

Prostaglandins: A group of compounds derived from unsaturated 20-carbon fatty acids, primarily arachidonic acid, via the cyclooxygenase pathway. They are extremely potent mediators of a diverse group of physiological processes. [NIH]

Prostaglandins A: (13E,15S)-15-Hydroxy-9-oxoprosta-10,13-dien-1-oic acid (PGA(1)); (5Z,13E,15S)-15-hydroxy-9-oxoprosta-5,10,13-trien-1-oic acid (PGA(2)); (5Z,13E,15S,17Z)-15-hydroxy-9-oxoprosta-5,10,13,17-tetraen-1-oic acid (PGA(3)). A group of naturally occurring secondary prostaglandins derived from PGE. PGA(1) and PGA(2) as well as their 19-hydroxy derivatives are found in many organs and tissues. [NIH]

Protease: Proteinase (= any enzyme that catalyses the splitting of interior peptide bonds in a protein). [EU]

Protein C: A vitamin-K dependent zymogen present in the blood, which, upon activation by thrombin and thrombomodulin exerts anticoagulant properties by inactivating factors Va and VIIIa at the rate-limiting steps of thrombin formation. [NIH]

Protein S: The vitamin K-dependent cofactor of activated protein C. Together with protein C, it inhibits the action of factors VIIIa and Va. A deficiency in protein S can lead to recurrent venous and arterial thrombosis. [NIH]

Proteins: Polymers of amino acids linked by peptide bonds. The specific sequence of amino

acids determines the shape and function of the protein. [NIH]

Proteinuria: The presence of protein in the urine, indicating that the kidneys are not working properly. [NIH]

Proteolytic: 1. Pertaining to, characterized by, or promoting proteolysis. 2. An enzyme that promotes proteolysis (= the splitting of proteins by hydrolysis of the peptide bonds with formation of smaller polypeptides). [EU]

Pseudotumor Cerebri: A condition marked by raised intracranial pressure and characterized clinically by headaches; nausea; papilledema, peripheral constriction of the visual fields, transient visual obscurations, and pulsatile tinnitus. Obesity is frequently associated with this condition, which primarily affects women between 20 and 44 years of age. Chronic papilledema may lead to optic nerve injury (optic nerve diseases) and visual loss (blindness). [NIH]

Psychic: Pertaining to the psyche or to the mind; mental. [EU]

Psychoactive: Those drugs which alter sensation, mood, consciousness or other psychological or behavioral functions. [NIH]

Psychomotor: Pertaining to motor effects of cerebral or psychic activity. [EU]

Psyllium: Dried, ripe seeds of Plantago psyllium, P. indica, and P. ovata (Plantaginaceae). Plantain seeds swell in water and are used as demulcents and bulk laxatives. [NIH]

Public Policy: A course or method of action selected, usually by a government, from among alternatives to guide and determine present and future decisions. [NIH]

Publishing: "The business or profession of the commercial production and issuance of literature" (Webster's 3d). It includes the publisher, publication processes, editing and editors. Production may be by conventional printing methods or by electronic publishing. [NIH]

Pulmonary: Relating to the lungs. [NIH]

Pulmonary Artery: The short wide vessel arising from the conus arteriosus of the right ventricle and conveying unaerated blood to the lungs. [NIH]

Pulmonary Edema: An accumulation of an excessive amount of watery fluid in the lungs, may be caused by acute exposure to dangerous concentrations of irritant gasses. [NIH]

Pulmonary hypertension: Abnormally high blood pressure in the arteries of the lungs. [NIH]

Pupil: The aperture in the iris through which light passes. [NIH]

Quality of Life: A generic concept reflecting concern with the modification and enhancement of life attributes, e.g., physical, political, moral and social environment. [NIH]

Quaternary: 1. Fourth in order. 2. Containing four elements or groups. [EU]

Quinidine: An optical isomer of quinine, extracted from the bark of the Cinchona tree and similar plant species. This alkaloid dampens the excitability of cardiac and skeletal muscles by blocking sodium and potassium currents across cellular membranes. It prolongs cellular action potential, and decreases automaticity. Quinidine also blocks muscarinic and alpha-adrenergic neurotransmission. [NIH]

Quinine: An alkaloid derived from the bark of the cinchona tree. It is used as an antimalarial drug, and is the active ingredient in extracts of the cinchona that have been used for that purpose since before 1633. Quinine is also a mild antipyretic and analgesic and has been used in common cold preparations for that purpose. It was used commonly and as a bitter and flavoring agent, and is still useful for the treatment of babesiosis. Quinine is also useful in some muscular disorders, especially nocturnal leg cramps and myotonia congenita, because of its direct effects on muscle membrane and sodium channels. The mechanisms of

its antimalarial effects are not well understood. [NIH]

Race: A population within a species which exhibits general similarities within itself, but is both discontinuous and distinct from other populations of that species, though not sufficiently so as to achieve the status of a taxon. [NIH]

Racemic: Optically inactive but resolvable in the way of all racemic compounds. [NIH]

Radiation: Emission or propagation of electromagnetic energy (waves/rays), or the waves/rays themselves; a stream of electromagnetic particles (electrons, neutrons, protons, alpha particles) or a mixture of these. The most common source is the sun. [NIH]

Radiation therapy: The use of high-energy radiation from x-rays, gamma rays, neutrons, and other sources to kill cancer cells and shrink tumors. Radiation may come from a machine outside the body (external-beam radiation therapy), or it may come from radioactive material placed in the body in the area near cancer cells (internal radiation therapy, implant radiation, or brachytherapy). Systemic radiation therapy uses a radioactive substance, such as a radiolabeled monoclonal antibody, that circulates throughout the body. Also called radiotherapy. [NIH]

Radioactive: Giving off radiation. [NIH]

Radiography: Examination of any part of the body for diagnostic purposes by means of roentgen rays, recording the image on a sensitized surface (such as photographic film). [NIH]

Random Allocation: A process involving chance used in therapeutic trials or other research endeavor for allocating experimental subjects, human or animal, between treatment and control groups, or among treatment groups. It may also apply to experiments on inanimate objects. [NIH]

Randomization: Also called random allocation. Is allocation of individuals to groups, e.g., for experimental and control regimens, by chance. Within the limits of chance variation, random allocation should make the control and experimental groups similar at the start of an investigation and ensure that personal judgment and prejudices of the investigator do not influence allocation. [NIH]

Randomized: Describes an experiment or clinical trial in which animal or human subjects are assigned by chance to separate groups that compare different treatments. [NIH]

Randomized clinical trial: A study in which the participants are assigned by chance to separate groups that compare different treatments; neither the researchers nor the participants can choose which group. Using chance to assign people to groups means that the groups will be similar and that the treatments they receive can be compared objectively. At the time of the trial, it is not known which treatment is best. It is the patient's choice to be in a randomized trial. [NIH]

Reagent: A substance employed to produce a chemical reaction so as to detect, measure, produce, etc., other substances. [EU]

Receptor: A molecule inside or on the surface of a cell that binds to a specific substance and causes a specific physiologic effect in the cell. [NIH]

Rectal: By or having to do with the rectum. The rectum is the last 8 to 10 inches of the large intestine and ends at the anus. [NIH]

Rectum: The last 8 to 10 inches of the large intestine. [NIH]

Red blood cells: RBCs. Cells that carry oxygen to all parts of the body. Also called erythrocytes. [NIH]

Reductase: Enzyme converting testosterone to dihydrotestosterone. [NIH]

Refer: To send or direct for treatment, aid, information, de decision. [NIH]

Refraction: A test to determine the best eyeglasses or contact lenses to correct a refractive error (myopia, hyperopia, or astigmatism). [NIH]

Refractory: Not readily yielding to treatment. [EU]

Regimen: A treatment plan that specifies the dosage, the schedule, and the duration of treatment. [NIH]

Rehabilitative: Instruction of incapacitated individuals or of those affected with some mental disorder, so that some or all of their lost ability may be regained. [NIH]

Relaxant: 1. Lessening or reducing tension. 2. An agent that lessens tension. [EU]

Renal failure: Progressive renal insufficiency and uremia, due to irreversible and progressive renal glomerular tubular or interstitial disease. [NIH]

Renin: An enzyme which is secreted by the kidney and is formed from prorenin in plasma and kidney. The enzyme cleaves the Leu-Leu bond in angiotensinogen to generate angiotensin I. EC 3.4.23.15. (Formerly EC 3.4.99.19). [NIH]

Renin-Angiotensin System: A system consisting of renin, angiotensin-converting enzyme, and angiotensin II. Renin, an enzyme produced in the kidney, acts on angiotensinogen, an alpha-2 globulin produced by the liver, forming angiotensin I. The converting enzyme contained in the lung acts on angiotensin I in the plasma converting it to angiotensin II, the most powerful directly pressor substance known. It causes contraction of the arteriolar smooth muscle and has other indirect actions mediated through the adrenal cortex. [NIH]

Reperfusion: Restoration of blood supply to tissue which is ischemic due to decrease in normal blood supply. The decrease may result from any source including atherosclerotic obstruction, narrowing of the artery, or surgical clamping. It is primarily a procedure for treating infarction or other ischemia, by enabling viable ischemic tissue to recover, thus limiting further necrosis. However, it is thought that reperfusion can itself further damage the ischemic tissue, causing reperfusion injury. [NIH]

Reperfusion Injury: Functional, metabolic, or structural changes, including necrosis, in ischemic tissues thought to result from reperfusion to ischemic areas of the tissue. The most common instance is myocardial reperfusion injury. [NIH]

Resection: Removal of tissue or part or all of an organ by surgery. [NIH]

Respiration: The act of breathing with the lungs, consisting of inspiration, or the taking into the lungs of the ambient air, and of expiration, or the expelling of the modified air which contains more carbon dioxide than the air taken in (Blakiston's Gould Medical Dictionary, 4th ed.). This does not include tissue respiration (= oxygen consumption) or cell respiration (= cell respiration). [NIH]

Respirator: A mechanical device that helps a patient breathe; a mechanical ventilator. [NIH]

Respiratory distress syndrome: A lung disease that occurs primarily in premature infants; the newborn must struggle for each breath and blueing of its skin reflects the baby's inability to get enough oxygen. [NIH]

Resuscitation: The restoration to life or consciousness of one apparently dead; it includes such measures as artificial respiration and cardiac massage. [EU]

Retina: The ten-layered nervous tissue membrane of the eye. It is continuous with the optic nerve and receives images of external objects and transmits visual impulses to the brain. Its outer surface is in contact with the choroid and the inner surface with the vitreous body. The outer-most layer is pigmented, whereas the inner nine layers are transparent. [NIH]

Retinal: 1. Pertaining to the retina. 2. The aldehyde of retinol, derived by the oxidative enzymatic splitting of absorbed dietary carotene, and having vitamin A activity. In the

retina, retinal combines with opsins to form visual pigments. One isomer, 11-cis retinal combines with opsin in the rods (scotopsin) to form rhodopsin, or visual purple. Another, all-trans retinal (trans-r.); visual yellow; xanthopsin) results from the bleaching of rhodopsin by light, in which the 11-cis form is converted to the all-trans form. Retinal also combines with opsins in the cones (photopsins) to form the three pigments responsible for colour vision. Called also retinal, and retinene1. [EU]

Retinol: Vitamin A. It is essential for proper vision and healthy skin and mucous membranes. Retinol is being studied for cancer prevention; it belongs to the family of drugs called retinoids. [NIH]

Rhamnose: A methylpentose whose L- isomer is found naturally in many plant glycosides and some gram-negative bacterial lipopolysaccharides. [NIH]

Rhodopsin: A photoreceptor protein found in retinal rods. It is a complex formed by the binding of retinal, the oxidized form of retinol, to the protein opsin and undergoes a series of complex reactions in response to visible light resulting in the transmission of nerve impulses to the brain. [NIH]

Ribose: A pentose active in biological systems usually in its D-form. [NIH]

Rickets: A condition caused by deficiency of vitamin D, especially in infancy and childhood, with disturbance of normal ossification. The disease is marked by bending and distortion of the bones under muscular action, by the formation of nodular enlargements on the ends and sides of the bones, by delayed closure of the fontanelles, pain in the muscles, and sweating of the head. Vitamin D and sunlight together with an adequate diet are curative, provided that the parathyroid glands are functioning properly. [EU]

Ritodrine: Adrenergic beta-agonist used to control premature labor. [NIH]

Rods: One type of specialized light-sensitive cells (photoreceptors) in the retina that provide side vision and the ability to see objects in dim light (night vision). [NIH]

Salivary: The duct that convey saliva to the mouth. [NIH]

Salivary glands: Glands in the mouth that produce saliva. [NIH]

Schizoid: Having qualities resembling those found in greater degree in schizophrenics; a person of schizoid personality. [NIH]

Schizophrenia: A mental disorder characterized by a special type of disintegration of the personality. [NIH]

Schizotypal Personality Disorder: A personality disorder in which there are oddities of thought (magical thinking, paranoid ideation, suspiciousness), perception (illusions, depersonalization), speech (digressive, vague, overelaborate), and behavior (inappropriate affect in social interactions, frequently social isolation) that are not severe enough to characterize schizophrenia. [NIH]

Screening: Checking for disease when there are no symptoms. [NIH]

Secretion: 1. The process of elaborating a specific product as a result of the activity of a gland; this activity may range from separating a specific substance of the blood to the elaboration of a new chemical substance. 2. Any substance produced by secretion. [EU]

Seizures: Clinical or subclinical disturbances of cortical function due to a sudden, abnormal, excessive, and disorganized discharge of brain cells. Clinical manifestations include abnormal motor, sensory and psychic phenomena. Recurrent seizures are usually referred to as epilepsy or "seizure disorder." [NIH]

Self Care: Performance of activities or tasks traditionally performed by professional health care providers. The concept includes care of oneself or one's family and friends. [NIH]

Senile: Relating or belonging to old age; characteristic of old age; resulting from infirmity of old age. [NIH]

Senna: Preparations of Cassia senna L. and C. angustifolia of the Leguminosae. They contain sennosides, which are anthraquinone type cathartics and are used in many different preparations as laxatives. [NIH]

Sensor: A device designed to respond to physical stimuli such as temperature, light, magnetism or movement and transmit resulting impulses for interpretation, recording, movement, or operating control. [NIH]

Serine: A non-essential amino acid occurring in natural form as the L-isomer. It is synthesized from glycine or threonine. It is involved in the biosynthesis of purines, pyrimidines, and other amino acids. [NIH]

Serotonin: A biochemical messenger and regulator, synthesized from the essential amino acid L-tryptophan. In humans it is found primarily in the central nervous system, gastrointestinal tract, and blood platelets. Serotonin mediates several important physiological functions including neurotransmission, gastrointestinal motility, hemostasis, and cardiovascular integrity. Multiple receptor families (receptors, serotonin) explain the broad physiological actions and distribution of this biochemical mediator. [NIH]

Serum: The clear liquid part of the blood that remains after blood cells and clotting proteins have been removed. [NIH]

Ships: Large vessels propelled by power or sail used for transportation on rivers, seas, oceans, or other navigable waters. Boats are smaller vessels propelled by oars, paddles, sail, or power; they may or may not have a deck. [NIH]

Shock: The general bodily disturbance following a severe injury; an emotional or moral upset occasioned by some disturbing or unexpected experience; disruption of the circulation, which can upset all body functions: sometimes referred to as circulatory shock. [NIH]

Side effect: A consequence other than the one(s) for which an agent or measure is used, as the adverse effects produced by a drug, especially on a tissue or organ system other than the one sought to be benefited by its administration. [EU]

Silicon: A trace element that constitutes about 27.6% of the earth's crust in the form of silicon dioxide. It does not occur free in nature. Silicon has the atomic symbol Si, atomic number 14, and atomic weight 28.09. [NIH]

Silicon Dioxide: Silica. Transparent, tasteless crystals found in nature as agate, amethyst, chalcedony, cristobalite, flint, sand, quartz, and tridymite. The compound is insoluble in water or acids except hydrofluoric acid. [NIH]

Skeletal: Having to do with the skeleton (boney part of the body). [NIH]

Skull: The skeleton of the head including the bones of the face and the bones enclosing the brain. [NIH]

Sludge: A clump of agglutinated red blood cells. [NIH]

Smooth muscle: Muscle that performs automatic tasks, such as constricting blood vessels. [NIH]

Social Environment: The aggregate of social and cultural institutions, forms, patterns, and processes that influence the life of an individual or community. [NIH]

Sodium: An element that is a member of the alkali group of metals. It has the atomic symbol Na, atomic number 11, and atomic weight 23. With a valence of 1, it has a strong affinity for oxygen and other nonmetallic elements. Sodium provides the chief cation of the extracellular body fluids. Its salts are the most widely used in medicine. (From Dorland,

27th ed) Physiologically the sodium ion plays a major role in blood pressure regulation, maintenance of fluid volume, and electrolyte balance. [NIH]

Solvent: 1. Dissolving; effecting a solution. 2. A liquid that dissolves or that is capable of dissolving; the component of a solution that is present in greater amount. [EU]

Sound wave: An alteration of properties of an elastic medium, such as pressure, particle displacement, or density, that propagates through the medium, or a superposition of such alterations. [NIH]

Spastic: 1. Of the nature of or characterized by spasms. 2. Hypertonic, so that the muscles are stiff and the movements awkward. 3. A person exhibiting spasticity, such as occurs in spastic paralysis or in cerebral palsy. [EU]

Specialist: In medicine, one who concentrates on 1 special branch of medical science. [NIH]

Species: A taxonomic category subordinate to a genus (or subgenus) and superior to a subspecies or variety, composed of individuals possessing common characters distinguishing them from other categories of individuals of the same taxonomic level. In taxonomic nomenclature, species are designated by the genus name followed by a Latin or Latinized adjective or noun. [EU]

Spectroscopic: The recognition of elements through their emission spectra. [NIH]

Spectrum: A charted band of wavelengths of electromagnetic vibrations obtained by refraction and diffraction. By extension, a measurable range of activity, such as the range of bacteria affected by an antibiotic (antibacterial s.) or the complete range of manifestations of a disease. [EU]

Spinal cord: The main trunk or bundle of nerves running down the spine through holes in the spinal bone (the vertebrae) from the brain to the level of the lower back. [NIH]

Spleen: An organ that is part of the lymphatic system. The spleen produces lymphocytes, filters the blood, stores blood cells, and destroys old blood cells. It is located on the left side of the abdomen near the stomach. [NIH]

Spotting: A slight discharge of blood via the vagina, especially as a side-effect of oral contraceptives. [EU]

Stabilization: The creation of a stable state. [EU]

Stabilizer: A device for maintaining constant X-ray tube voltage or current. [NIH]

Statistically significant: Describes a mathematical measure of difference between groups. The difference is said to be statistically significant if it is greater than what might be expected to happen by chance alone. [NIH]

Status Asthmaticus: A sudden intense and continuous aggravation of a state of asthma, marked by dyspnea to the point of exhaustion and collapse and not responding to the usual therapeutic efforts. [NIH]

Status Epilepticus: Repeated and prolonged epileptic seizures without recovery of consciousness between attacks. [NIH]

Steel: A tough, malleable, iron-based alloy containing up to, but no more than, two percent carbon and often other metals. It is used in medicine and dentistry in implants and instrumentation. [NIH]

Sterile: Unable to produce children. [NIH]

Steroid: A group name for lipids that contain a hydrogenated cyclopentanoperhydrophenanthrene ring system. Some of the substances included in this group are progesterone, adrenocortical hormones, the gonadal hormones, cardiac aglycones, bile acids, sterols (such as cholesterol), toad poisons, saponins, and some of the carcinogenic

hydrocarbons. [EU]

Stillbirth: The birth of a dead fetus or baby. [NIH]

Stimulant: 1. Producing stimulation; especially producing stimulation by causing tension on muscle fibre through the nervous tissue. 2. An agent or remedy that produces stimulation. [EU]

Stimulus: That which can elicit or evoke action (response) in a muscle, nerve, gland or other excitable issue, or cause an augmenting action upon any function or metabolic process. [NIH]

Stroke: Sudden loss of function of part of the brain because of loss of blood flow. Stroke may be caused by a clot (thrombosis) or rupture (hemorrhage) of a blood vessel to the brain. [NIH]

Subacute: Somewhat acute; between acute and chronic. [EU]

Subarachnoid: Situated or occurring between the arachnoid and the pia mater. [EU]

Subclinical: Without clinical manifestations; said of the early stage(s) of an infection or other disease or abnormality before symptoms and signs become apparent or detectable by clinical examination or laboratory tests, or of a very mild form of an infection or other disease or abnormality. [EU]

Subcutaneous: Beneath the skin. [NIH]

Substance P: An eleven-amino acid neurotransmitter that appears in both the central and peripheral nervous systems. It is involved in transmission of pain, causes rapid contractions of the gastrointestinal smooth muscle, and modulates inflammatory and immune responses. [NIH]

Substrate: A substance upon which an enzyme acts. [EU]

Succinylcholine: A quaternary skeletal muscle relaxant usually used in the form of its bromide, chloride, or iodide. It is a depolarizing relaxant, acting in about 30 seconds and with a duration of effect averaging three to five minutes. Succinylcholine is used in surgical, anesthetic, and other procedures in which a brief period of muscle relaxation is called for. [NIH]

Sulfur: An element that is a member of the chalcogen family. It has an atomic symbol S, atomic number 16, and atomic weight 32.066. It is found in the amino acids cysteine and methionine. [NIH]

Sulfur Compounds: Inorganic or organic compounds that contain sulfur as an integral part of the molecule. [NIH]

Sulfur Dioxide: A highly toxic, colorless, nonflammable gas. It is used as a pharmaceutical aid and antioxidant. It is also an environmental air pollutant. [NIH]

Sulfuric acid: A strong acid that, when concentrated is extemely corrosive to the skin and mucous membranes. It is used in making fertilizers, dyes, electroplating, and industrial explosives. [NIH]

Suppositories: A small cone-shaped medicament having cocoa butter or gelatin at its basis and usually intended for the treatment of local conditions in the rectum. [NIH]

Supraventricular: Situated or occurring above the ventricles, especially in an atrium or atrioventricular node. [EU]

Surfactant: A fat-containing protein in the respiratory passages which reduces the surface tension of pulmonary fluids and contributes to the elastic properties of pulmonary tissue. [NIH]

Suspensions: Colloids with liquid continuous phase and solid dispersed phase; the term is used loosely also for solid-in-gas (aerosol) and other colloidal systems; water-insoluble drugs may be given as suspensions. [NIH]

Symptomatic: Having to do with symptoms, which are signs of a condition or disease. [NIH]

Systemic: Affecting the entire body. [NIH]

Systolic: Indicating the maximum arterial pressure during contraction of the left ventricle of the heart. [EU]

Tachycardia: Excessive rapidity in the action of the heart, usually with a heart rate above 100 beats per minute. [NIH]

Tachypnea: Rapid breathing. [NIH]

Talc: A native magnesium silicate. [NIH]

Temporal: One of the two irregular bones forming part of the lateral surfaces and base of the skull, and containing the organs of hearing. [NIH]

Teratogenic: Tending to produce anomalies of formation, or teratism (= anomaly of formation or development : condition of a monster). [EU]

Terbutaline: A selective beta-2 adrenergic agonist used as a bronchodilator and tocolytic. [NIH]

Testicular: Pertaining to a testis. [EU]

Tetani: Causal agent of tetanus. [NIH]

Tetanic: Having the characteristics of, or relating to tetanus. [NIH]

Tetanus: A disease caused by tetanospasmin, a powerful protein toxin produced by Clostridium tetani. Tetanus usually occurs after an acute injury, such as a puncture wound or laceration. Generalized tetanus, the most common form, is characterized by tetanic muscular contractions and hyperreflexia. Localized tetanus presents itself as a mild condition with manifestations restricted to muscles near the wound. It may progress to the generalized form. [NIH]

Tetany: 1. Hyperexcitability of nerves and muscles due to decrease in concentration of extracellular ionized calcium, which may be associated with such conditions as parathyroid hypofunction, vitamin D deficiency, and alkalosis or result from ingestion of alkaline salts; it is characterized by carpopedal spasm, muscular twitching and cramps, laryngospasm with inspiratory stridor, hyperreflexia and choreiform movements. 2. Tetanus. [EU]

Therapeutics: The branch of medicine which is concerned with the treatment of diseases, palliative or curative. [NIH]

Thermal: Pertaining to or characterized by heat. [EU]

Thoracic: Having to do with the chest. [NIH]

Thoracic Surgery: A surgical specialty concerned with diagnosis and treatment of disorders of the heart, lungs, and esophagus. Two major types of thoracic surgery are classified as pulmonary and cardiovascular. [NIH]

Threshold: For a specified sensory modality (e. g. light, sound, vibration), the lowest level (absolute threshold) or smallest difference (difference threshold, difference limen) or intensity of the stimulus discernible in prescribed conditions of stimulation. [NIH]

Thrombolytic: 1. Dissolving or splitting up a thrombus. 2. A thrombolytic agent. [EU]

Thrombolytic Therapy: Use of infusions of fibrinolytic agents to destroy or dissolve thrombi in blood vessels or bypass grafts. [NIH]

Thrombosis: The formation or presence of a blood clot inside a blood vessel. [NIH]

Thrombus: An aggregation of blood factors, primarily platelets and fibrin with entrapment of cellular elements, frequently causing vascular obstruction at the point of its formation. Some authorities thus differentiate thrombus formation from simple coagulation or clot

formation. [EU]

Thyroid: A gland located near the windpipe (trachea) that produces thyroid hormone, which helps regulate growth and metabolism. [NIH]

Thyroid Gland: A highly vascular endocrine gland consisting of two lobes, one on either side of the trachea, joined by a narrow isthmus; it produces the thyroid hormones which are concerned in regulating the metabolic rate of the body. [NIH]

Tissue: A group or layer of cells that are alike in type and work together to perform a specific function. [NIH]

Tissue Plasminogen Activator: A proteolytic enzyme in the serine protease family found in many tissues which converts plasminogen to plasmin. It has fibrin-binding activity and is immunologically different from urinary plasminogen activator. The primary sequence, composed of 527 amino acids, is identical in both the naturally occurring and synthetic proteases. EC 3.4.21.68. [NIH]

Tobramycin: An aminoglycoside, broad-spectrum antibiotic produced by Streptomyces tenebrarius. It is effective against gram-negative bacteria, especially the Pseudomonas species. It is a 10% component of the antibiotic complex, nebramycin, produced by the same species. [NIH]

Tocolysis: Any drug treatment modality designed to inhibit uterine contractions in pregnant women at risk for preterm labor. [NIH]

Tocolytic Agents: Drugs that prevent preterm labor and immature birth by suppressing uterine contractions. Agents used to delay premature uterine activity include magnesium sulfate, beta-mimetics, oxytocin antagonists, calcium channel inhibitors, and adrenergic beta-receptor agonists. The use of intravenous alcohol as a tocolytic is now obsolete. [NIH]

Tone: 1. The normal degree of vigour and tension; in muscle, the resistance to passive elongation or stretch; tonus. 2. A particular quality of sound or of voice. 3. To make permanent, or to change, the colour of silver stain by chemical treatment, usually with a heavy metal. [EU]

Tonus: A state of slight tension usually present in muscles even when they are not undergoing active contraction. [NIH]

Topical: On the surface of the body. [NIH]

Toxaemia: 1. The condition resulting from the spread of bacterial products (toxins) by the bloodstream. 2. A condition resulting from metabolic disturbances, e.g. toxaemia of pregnancy. [EU]

Toxemia: A generalized intoxication produced by toxins and other substances elaborated by an infectious agent. [NIH]

Toxic: Having to do with poison or something harmful to the body. Toxic substances usually cause unwanted side effects. [NIH]

Toxicity: The quality of being poisonous, especially the degree of virulence of a toxic microbe or of a poison. [EU]

Toxicology: The science concerned with the detection, chemical composition, and pharmacologic action of toxic substances or poisons and the treatment and prevention of toxic manifestations. [NIH]

Toxin: A poison; frequently used to refer specifically to a protein produced by some higher plants, certain animals, and pathogenic bacteria, which is highly toxic for other living organisms. Such substances are differentiated from the simple chemical poisons and the vegetable alkaloids by their high molecular weight and antigenicity. [EU]

Trace element: Substance or element essential to plant or animal life, but present in extremely small amounts. [NIH]

Transfection: The uptake of naked or purified DNA into cells, usually eukaryotic. It is analogous to bacterial transformation. [NIH]

Translocation: The movement of material in solution inside the body of the plant. [NIH]

Transmitter: A chemical substance which effects the passage of nerve impulses from one cell to the other at the synapse. [NIH]

Trauma: Any injury, wound, or shock, must frequently physical or structural shock, producing a disturbance. [NIH]

Trophoblast: The outer layer of cells of the blastocyst which works its way into the endometrium during ovum implantation and grows rapidly, later combining with mesoderm. [NIH]

Tropomyosin: A protein found in the thin filaments of muscle fibers. It inhibits contraction of the muscle unless its position is modified by troponin. [NIH]

Troponin: One of the minor protein components of skeletal muscle. Its function is to serve as the calcium-binding component in the troponin-tropomyosin B-actin-myosin complex by conferring calcium sensitivity to the cross-linked actin and myosin filaments. [NIH]

Tumor Necrosis Factor: Serum glycoprotein produced by activated macrophages and other mammalian mononuclear leukocytes which has necrotizing activity against tumor cell lines and increases ability to reject tumor transplants. It mimics the action of endotoxin but differs from it. It has a molecular weight of less than 70,000 kDa. [NIH]

Ulceration: 1. The formation or development of an ulcer. 2. An ulcer. [EU]

Ulcerogenic: Causing ulceration; leading to the production of ulcers. [EU]

Ultrasonography: The visualization of deep structures of the body by recording the reflections of echoes of pulses of ultrasonic waves directed into the tissues. Use of ultrasound for imaging or diagnostic purposes employs frequencies ranging from 1.6 to 10 megahertz. [NIH]

Ultraviolet Rays: That portion of the electromagnetic spectrum immediately below the visible range and extending into the x-ray frequencies. The longer wavelengths (near-UV or biotic or vital rays) are necessary for the endogenous synthesis of vitamin D and are also called antirachitic rays; the shorter, ionizing wavelengths (far-UV or abiotic or extravital rays) are viricidal, bactericidal, mutagenic, and carcinogenic and are used as disinfectants. [NIH]

Umbilical Arteries: Either of a pair of arteries originating from the internal iliac artery and passing through the umbilical cord to carry blood from the fetus to the placenta. [NIH]

Umbilical Cord: The flexible structure, giving passage to the umbilical arteries and vein, which connects the embryo or fetus to the placenta. [NIH]

Uraemia: 1. An excess in the blood of urea, creatinine, and other nitrogenous end products of protein and amino acids metabolism; more correctly referred to as azotemia. 2. In current usage the entire constellation of signs and symptoms of chronic renal failure, including nausea, vomiting anorexia, a metallic taste in the mouth, a uraemic odour of the breath, pruritus, uraemic frost on the skin, neuromuscular disorders, pain and twitching in the muscles, hypertension, edema, mental confusion, and acid-base and electrolyte imbalances. [EU]

Urea: A compound (CO(NH2)2), formed in the liver from ammonia produced by the deamination of amino acids. It is the principal end product of protein catabolism and constitutes about one half of the total urinary solids. [NIH]

Urethane: Antineoplastic agent that is also used as a veterinary anesthetic. It has also been used as an intermediate in organic synthesis. Urethane is suspected to be a carcinogen. [NIH]

Urinary: Having to do with urine or the organs of the body that produce and get rid of urine. [NIH]

Urinary Plasminogen Activator: A proteolytic enzyme that converts plasminogen to plasmin where the preferential cleavage is between arginine and valine. It was isolated originally from human urine, but is found in most tissues of most vertebrates. EC 3.4.21.73. [NIH]

Urine: Fluid containing water and waste products. Urine is made by the kidneys, stored in the bladder, and leaves the body through the urethra. [NIH]

Uterine Contraction: Contraction of the uterine muscle. [NIH]

Uterus: The small, hollow, pear-shaped organ in a woman's pelvis. This is the organ in which a fetus develops. Also called the womb. [NIH]

Vagina: The muscular canal extending from the uterus to the exterior of the body. Also called the birth canal. [NIH]

Vascular: Pertaining to blood vessels or indicative of a copious blood supply. [EU]

Vascular Resistance: An expression of the resistance offered by the systemic arterioles, and to a lesser extent by the capillaries, to the flow of blood. [NIH]

Vasculitis: Inflammation of a blood vessel. [NIH]

Vasoactive: Exerting an effect upon the calibre of blood vessels. [EU]

Vasoconstriction: Narrowing of the blood vessels without anatomic change, for which constriction, pathologic is used. [NIH]

Vasodilation: Physiological dilation of the blood vessels without anatomic change. For dilation with anatomic change, dilatation, pathologic or aneurysm (or specific aneurysm) is used. [NIH]

Vasodilator: An agent that widens blood vessels. [NIH]

Vein: Vessel-carrying blood from various parts of the body to the heart. [NIH]

Venous: Of or pertaining to the veins. [EU]

Ventilation: 1. In respiratory physiology, the process of exchange of air between the lungs and the ambient air. Pulmonary ventilation (usually measured in litres per minute) refers to the total exchange, whereas alveolar ventilation refers to the effective ventilation of the alveoli, in which gas exchange with the blood takes place. 2. In psychiatry, verbalization of one's emotional problems. [EU]

Ventricle: One of the two pumping chambers of the heart. The right ventricle receives oxygen-poor blood from the right atrium and pumps it to the lungs through the pulmonary artery. The left ventricle receives oxygen-rich blood from the left atrium and pumps it to the body through the aorta. [NIH]

Ventricular: Pertaining to a ventricle. [EU]

Ventricular fibrillation: Rapid, irregular quivering of the heart's ventricles, with no effective heartbeat. [NIH]

Vertebrae: A bony unit of the segmented spinal column. [NIH]

Veterinary Medicine: The medical science concerned with the prevention, diagnosis, and treatment of diseases in animals. [NIH]

Virulence: The degree of pathogenicity within a group or species of microorganisms or viruses as indicated by case fatality rates and/or the ability of the organism to invade the

tissues of the host. [NIH]

Viruses: Minute infectious agents whose genomes are composed of DNA or RNA, but not both. They are characterized by a lack of independent metabolism and the inability to replicate outside living host cells. [NIH]

Vitro: Descriptive of an event or enzyme reaction under experimental investigation occurring outside a living organism. Parts of an organism or microorganism are used together with artificial substrates and/or conditions. [NIH]

Vivo: Outside of or removed from the body of a living organism. [NIH]

Wakefulness: A state in which there is an enhanced potential for sensitivity and an efficient responsiveness to external stimuli. [NIH]

War: Hostile conflict between organized groups of people. [NIH]

Withdrawal: 1. A pathological retreat from interpersonal contact and social involvement, as may occur in schizophrenia, depression, or schizoid avoidant and schizotypal personality disorders. 2. (DSM III-R) A substance-specific organic brain syndrome that follows the cessation of use or reduction in intake of a psychoactive substance that had been regularly used to induce a state of intoxication. [EU]

Wound Healing: Restoration of integrity to traumatized tissue. [NIH]

Xenograft: The cells of one species transplanted to another species. [NIH]

X-ray: High-energy radiation used in low doses to diagnose diseases and in high doses to treat cancer. [NIH]

Zinc Oxide: A mild astringent and topical protectant with some antiseptic action. It is also used in bandages, pastes, ointments, dental cements, and as a sunblock. [NIH]

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