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Medical use of dimethyl sulfoxide (DMSO)

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Abstract

DMSO is a clear odorless liquid, inexpensively produced as a by-product of the paper industry. It is widely available in the USA as a solvent but its medical use is currently restricted by the FDA to the palliative treatment of interstitial cystitis and to certain experimental applications. Cutaneous manifestations of scleroderma appear to resolve (albeit equivocally) following topical applications of high concentrations of DMSO. A limited number of small clinical trials indicate that intravenous DMSO may be of benefit in the treatment of amyloidosis, possibly by mobilizing amyloid deposits out of tissues into urine. Dermal application of DMSO seems to provide rapid, temporary, relief of pain in patients with arthritis and connective tissue injuries. However, claims for antiinflammatory effects or acceleration of healing are currently unwarranted. There is no evidence that DMSO can alter progression of degenerative joint disease, and, for this reason, DMSO may be considered for palliative treatment only and not to the exclusion of standard antiinflammatory agents. The safety of DMSO in combination with other drugs has not been established; neurotoxic interactions with sulindac have been reported. In experimental animals, intravenous DMSO is as effective as mannitol and dexamethasone in reversing cerebral edema and intracranial hypertension. An initial clinical trial in 11 patients tends to support this latter application. DMSO enhances diffusion of other chemicals through the skin, and, for this reason, mixtures of idoxuridine and DMSO are used for topical treatment of herpes zoster in the UK. Adverse reactions to DMSO are common, but are usually minor and related to the concentration of DMSO in the medication solution. Consequently, the most frequent side effects, such as skin rash and pruritus after dermal application, intravascular hemolysis after intravenous infusion and gastrointestinal discomfort after oral administration, can be avoided in large part by employing more dilute solutions. Most clinical trials of DMSO have not incorporated the components of experimental design necessary for objective, statistical evaluation of efficacy. Randomized comparisons between DMSO, placebo and known active treatments were rarely completed. Final approval of topical DMSO for treatment of rheumatic diseases in particular will require a multi-center, randomized comparison between high and low concentrations of DMSO and an orally-active, nonsteroidal antiinflammatory agent.(ABSTRACT TRUNCATED AT 400 WORDS)

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