

Tincture of iodine

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Tincture of iodine, **iodine tincture**, or **weak iodine solution** is an [antiseptic](#). It is usually 2–7% elemental [iodine](#), along with [potassium iodide](#) or [sodium iodide](#), dissolved in a mixture of [ethanol](#) and water. [Tincture](#) solutions are characterized by the presence of alcohol. It was used from 1908 in pre-operative skin preparation by surgeon [Antonio Grossich](#).^{[1][2]}

In the United Kingdom the development of an iodine solution for skin sterilisation was pioneered by Lionel Stretton. The *British Medical Journal* published the detail of his work at Kidderminster Infirmary in 1909.^[3] Stretton used a much weaker solution than that used by Grossich. He claimed in 1915 that Grossich had been using a liquid akin to Liquor Iodi Fortis, and that it was he, Stretton, who had introduced the method using Tincture of Iodine BP which came to be used across the world.^[4]

Contents

[hide]

[1 USP formulas](#)

[2 Usage](#)

[3 See also](#)

[4 References](#)

[5 External links](#)

USP formulas [\[edit\]](#)

USP Tincture of Iodine is defined in the U.S. National Formulary (NF) as containing in each 100 mL, 1.8 to 2.2 grams of elemental iodine, and 2.1 to 2.6 grams of sodium iodide. Alcohol is 50 ml and the balance is purified water. This "2% free iodine" solution provides about one mg of free iodine per drop.

USP Strong Iodine Tincture is defined in the NF as containing in each 100 mL, 6.8 to 7.5 gram of iodine, and 4.7 to 5.5 gram of potassium iodide. Purified water is 50 mL and the balance is alcohol. This 7% tincture solution is about 3.5 times more concentrated than USP 2% tincture.^[*citation needed*]

Iodine tincture



Tincture of iodine used to disinfect the area around an [epidural](#) catheter.

Clinical data

[AHFS/Drugs.com](#)

[Monograph](#)^[?]

[Pregnancy category](#)

D

[Routes of administration](#)

Topical

[ATCvet code](#)

[QD08AG](#) ([WHO](#))^[?]

Identifiers

[IUPAC name](#)

[\[show\]](#)

[CAS Number](#)

[7553-56-2](#)^[?]

[PubChem CID](#)

[807](#)^[?]

[DrugBank](#)

[DB05382](#)^[?]

Chemical and physical data

[Formula](#)

I₂

As in the case of [Lugol's iodine](#), the role of iodide in the solution is to increase the solubility of the elemental iodine, by turning it to the soluble [triiodide anion](#) I_3^- . However, since iodine has moderate solubility in ethanol, it is also assisted by this solvent directly. Lugol's iodine, by contrast, has no alcohol, and has twice the mass of potassium iodide as of elemental iodine.

Usage [\[edit\]](#)

As both USP solutions contain **elemental iodine**, which is moderately toxic when ingested in amounts larger than those required to disinfect water, tincture of iodine is sold labelled "for external use only," and used primarily as a disinfectant.

Tincture of iodine is often found in emergency survival kits, used both to disinfect wounds and to sanitize surface water for drinking. When an alcohol solution is not desirable for this purpose, the alcohol-free [Lugol's iodine](#), an aqueous solution of iodine in [potassium iodide](#) solution, or else [povidone-iodine](#) (brand names Wokadine, Betadine), a [PVPI solution](#), can be used.

Small amounts may be added to suspect drinking water as a disinfectant (typically 5 mg free iodine per liter, or 5 drops of 2% tincture). Though this treatment is effective against bacteria and virus, it does not protect against [protozoan](#) parasites such as [Cryptosporidium](#) and [Giardia](#).^[5]

Iodine solution is used to sanitize the surface of fruit and vegetables for bacteria and virus. The common concentration for sanitization is 25 ppm iodophor for 1 minute.^[6] However, the effectiveness depends on whether the solution penetrates into rifts, and whether dirt is effectively removed at first. But, [oocytes](#) of protozoan parasites will not be killed, and it is also doubtful that bacterial [spores](#) are killed. Iodine solutions should not be considered able to sanitize or disinfect [salad](#), [fruit](#) or [vegetables](#) that are contaminated by [feces](#). Thus, it should not be considered safe to eat raw fruit, salads and vegetables which are sanitized with iodine, if they could be contaminated by feces.^[7]

Iodine tincture is not a recommended source of solely-nutritional iodine. Nutritional iodine is better supplied in the form of the less toxic [iodide](#) (see [SSKI](#)) or [iodate](#) salts, which the body can easily convert to thyroid hormone.

Nevertheless, the iodide in tincture of iodine used as a water disinfectant does supply more than adequate nutritional iodine, perhaps 30 or more times the recommended daily allowance per liter or quart. Application of tincture or Lugol's to the skin also results in absorption and bioavailability of some moderate fraction of the iodine.

See also [\[edit\]](#)

- [Antiseptic](#)
- [Cadexomer iodine](#)
- [Chlorhexidine](#)
- [Iodophor](#)
- [Inadine](#)
- [Povidone-iodine](#)
- [Lugol's iodine](#)
- [Brilliant green \(dye\)](#)

References [\[edit\]](#)

- ↑ Seymour S. Block (2001). *Disinfection, Sterilization, and Preservation, 5e* . Lippincott Williams & Wilkins. p. 922. ISBN 978-0-683-30740-5. Retrieved 7 January 2013.
- ↑ Barefanger, Joan (1 May 2004). "Comparison of chlorhexidine and tincture of iodine for skin antisepsis in preparation of blood sample collection" . *Journal of Clinical Microbiology*. **42** (5): 2216–2217.

- [doi:10.1128/JCM.42.5.2216-2217.2004](https://doi.org/10.1128/JCM.42.5.2216-2217.2004)[↗]. [PMC 404630](#)[↗]. [PMID 15131193](#)[↗]. Retrieved 14 October 2017.
- [↗] Stretton, J. Lionel (14 August 1909). "The Sterilization of the Skin of Operation Areas"[↗]. *British Medical Journal*. **2** (2537): 368–369. [ISSN 0007-1447](#)[↗]. [PMC 2320536](#)[↗]. [PMID 20764617](#)[↗].
 - [↗] Stretton, J. Lionel (22 May 1915). "The Sterilisation of the Skin with Tincture of Iodine"[↗]. *British Medical Journal*. **1** (2838): 886–887. [ISSN 0007-1447](#)[↗]. [PMC 2302255](#)[↗]. [PMID 20767647](#)[↗].
 - [↗] A Guide to Drinking Water Treatment and Sanitation for Backcountry & Travel Use, Centers for Disease Control and Prevention [\[1\]](#)[↗]. Retrieved 14 February 2015.
 - [↗] Sanitizers and Disinfectants: The Chemicals of Prevention, Foodsafety Magazine [\[2\]](#)[↗]. Retrieved 14 February 2015.
 - [↗] Surface decontamination of fruit and vegetable eaten raw [\[3\]](#)[↗]. Retrieved 14 February 2015.

External links ^{[[edit](#)]}

- [Health Canada Drinking water quality](#)[↗]See the section on: water away from home
- Categories: [Antiseptics](#) | [Disinfectants](#) | [Iodine](#) | [Tinctures](#)