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Colloidal silver

Sci-Tech Dictionary: colloidal silver

(kə'löid·əl 'sil·vər)

(*materials*) Finely divided particles of silver, sometimes used on terminals of electronic components to give a larger surface area for connections.

Alternative Medicine Encyclopedia: Colloidal Silver

Description

A colloid is a suspension of submicroscopic particles in a medium of a different material. Colloidal silver is metallic silver suspended in water.

Some minerals are required in the diet for optimum health. These are known as essential minerals. Contrary to claims by some manufacturers of colloidal products, silver is not an essential mineral.

On the other hand, silver undoubtedly has antimicrobial properties, along with some other metals such as copper. Historically, coins or other items made of silver were used to help keep water from becoming contaminated and to keep milk fresh for longer periods when refrigeration was not available. This method may still be used today in some remote areas of the world. Silver is also impregnated into some water filtration systems used both for swimming pools and for drinking water.

Despite the proven antibacterial, antiviral, and anti-fungal properties of silver in vitro, it is unclear whether it can exert the same effects when taken into the body. Part of the issue is what concentration of silver reaches the area where the infection is occurring before being bound, disseminated, or excreted. Another question is whether the ingested silver would have an adequate time of contact with the target organisms to produce the desired effect. It has a greater chance of benefiting a patient with local and topical infections.

Colloidal silver products are often touted as the answer to the problem of microbial resistance to antibiotics. While it is certainly true that antibiotics are overused, leading to more bacteria becoming resistant, substantive evidence that colloidal silver is a safe and effective replacement does not yet exist.

General Use

Silver is already used in some compounds that are in common use against infections. Silvadine is a frequently used agent to prevent infection in burn patients. Silver nitrate was used in the eyes of newborns for years to prevent blindness caused by contracting gonorrhea, a sexually transmitted disease (STD), during the passage through the birth canal. The medication was not, however, effective against chlamydia, another STD that causes neonatal conjunctivitis. Silver nitrate can also be very irritating to the tissues of the eye. Erythromycin and tetracycline are now more frequently used in the United States for neonatal prophylaxis.

The claims made for colloidal silver are innumerable. Silver has been said to be effective against hundreds of strains of bacteria, and to be supportive in the treatment of colds and flu, hepatitis, Epstein-Barr virus, pneumonia, bronchitis, and yeast infections. It has also been recommended for topical use in the mouth, eyes, ears, nose, sinuses, and for a wide variety of skin conditions. It is difficult to determine which of the claims, if any of them, have merit because substantive research data are lacking. Most of the reported effects are based on in vitro or anecdotal evidence. Extrapolations from such testimonials would be challenging due to the variability in particle size, concentration, quality of the preparation, and total dose.

Preparations

Silver colloid has been created by grinding, wave method (such as ultrasonic), liquid, chemical, or electrical modes of manufacture. They vary in how large the particles of silver are that are produced, and whether they carry an electrical charge. Particles that are very small and charged repel each other enough that they

tend to remain in a suspended state for a longer time rather than settling. Currently, the electrocolloidal process is the most used, and considered to be the best at creating very small, charged particles.

Colloidal silver may be purchased ready for use, but products have been found to be inconsistent in content, varying from 15–120% of the silver concentration they are labeled to contain. Commercially produced products vary greatly in particle size, potency, stability, and contents. Some contain stabilizers or trace elements in addition to silver, which are considered undesirable. Others have been found to have bacterial contaminants.

The Food and Drug Administration (FDA) at one time considered it a medication, exempted from the standard regulations as a result of being used and marketed prior to 1938. Since that time, the exemption has been revoked. In the United States, silver is now considered a dietary supplement as opposed to an over-the-counter medication. As such, specific claims to benefit or treat medical conditions can not be made.

As an alternative to manufactured colloidal silver products, assorted kits are available for the individual to make colloidal silver for personal use. These kits generally use an electrical current to disperse particulate silver into the carrier. Important factors for producing colloidal silver at home are the purity of the silver, the purity of the water, and proper timing to form the desired concentration. Stability of the colloid is variable, and the silver will tend to gradually settle as the charge on the particles dissipates.

Precautions

The deposition of silver under the skin can cause a condition called argyria. This condition is not common, but the skin of those who are affected is permanently stained a blue or gray color. The type of silver compound, length of treatment, concentration, and total dose required to cause argyria is a matter of some debate. There seems to be a great individual variation in susceptibility. Proponents claim that the true colloidal form of silver cannot cause the condition, but for safety purposes, all silver consumed should be considered a potential contributor to argyria. Some colloidal silver products include this warning on the label.

Extremely large doses of silver, much beyond what is recommended by proponents for therapeutic use, may cause neurologic signs or organ damage. Most of the studies of toxicity have been performed using salts of silver, such as silver nitrate, which have a higher silver concentration and greater toxicity than colloidal forms. The latter are generally in the range of 5–10 parts per million (PPM), which is equal to a 0.0005–0.001% solution.

Side Effects

There are no reported side effects.

Interactions

Interaction of colloidal silver with foods, medications, or herbs are not documented.

Resources

Books

Baranowski, Zane. *Colloidal Silver: The Natural Antibiotic Alternative.* New York: Healing Wisdom Publications, 1995.

Other

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[Article by: Judith Turner]

Wikipedia: Colloidal silver

Colloidal silver is a liquid suspension of microscopic particles of silver. A colloid is technically defined as particles which remain suspended without forming an ionic, or dissolved solution. The broader commercial definition of "colloidal silver" includes products that contain various concentrations of ionic silver, silver colloids, ionic silver compounds or silver proteins in purified water. Colloidal silver with concentrations of 30 parts per million (ppm) or less are typically manufactured using an electrolysis process, whereas colloidal silver with higher concentrations of 50 ppm or more are usually silver compounds that have been bound with a protein.

Currently, colloidal silver is marketed for internal and external use as an alternative medical remedy, though there is no scientific evidence of its effectiveness.[1] Excessive use can result in argyria, a cosmetic condition in which the skin turns blue or grey.

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Historical applications

Silver has had some medicinal uses going back for centuries. In the early 1900s, silver gained regulatory approval as an antimicrobial agent. However, the use of silver diminished with the introduction of antibiotics in the early 1940s. [2] A few prescription drugs containing silver are still available. [1][3] Prior to 1938, colloidal silver was used as a germicide and disinfectant.[4] Physicians used it as an eyedrop for ophthalmic problems,[5] for various infections,[6][7] and sometimes internally for diseases such as tropical sprue, epilepsy, gonorrhea, and the common cold.[8][3][1][3]

Current applications

From approximately 1990, especially with the emerging problem of antibiotic resistance [2], there has been a resurgence of the promotion of colloidal silver as an alternative medicine treatment, marketed with claims that it can prevent or treat numerous diseases.[9] *In vitro* evidence of an antimicrobial effect of colloidal silver is mixed; some studies have found it to lack any antibacterial effect,[10] while others have reported colloidal solutions of 5-30ppm as being effective against staph and e.coli[11][12] There are no clinical trials showing that any preparation of colloidal silver is effective *in vivo*.[1]

Colloidal silver products are legally available at health food stores in the United States and Australia and are marketed over the Internet as a dietary supplement. It is illegal in the U.S. and Australia for marketers to make claims of medical effectiveness for colloidal silver, but some websites still list its use for the prevention of colds and flu, and the treatment of more serious conditions such as diabetes, cancer, chronic fatigue syndrome, HIV/AIDS, and tuberculosis, among other

diseases.[13][14] There is no medical evidence that colloidal silver is effective for any of these claimed indications.[15][16] Silver is not an essential mineral in humans; there is no dietary requirement for silver, and no such thing as a silver "deficiency".[1]

Currently, there are no evidence-based medical uses for ingested colloidal silver. There are no clinical studies in humans demonstrating effectiveness, and several reports of toxicity.[3] The U.S. National Center for Complementary and Alternative Medicine has issued an advisory indicating that the marketing claims made about colloidal silver are scientifically unsupported, and that the silver content of marketed supplements varies widely and can pose risks to the consumer.[1]

Use as water disinfectant

Electrolytically dissolved silver has been used as a water disinfecting agent. Silver was added as a disinfectant to the drinking water supplies of Russian Mir orbital station and the International Space Station.[17] The World Health Organization includes silver in a colloidal state produced by electrolysis of silver electrodes in water, and colloidal silver in water filters as two of a number of water disinfection methods specified to provide safe drinking water in developing countries.[18] Along these lines, a ceramic filtration system coated with silver particles has been created by Ron Rivera of Potters for Peace and used in developing countries for water disinfection.[19][20][21]

Use in horticulture

Silver in ionic solutions like silver thiosulfate and silver nitrate (not suspended elemental silver) has been shown to be an ethylene inhibitor[22] by competing with ethylene for binding sites by the plant receptors[23]. Because of this property, solutions containing silver ions are sometimes used by florists to keep flowers fresh longer [24]. Since ethylene is also involved in the "sexing" of plants, this property of blocking ethylene synthesis is also used for forcing male flowers on female plants.[25] As a result, the use of ionic silver solutions has become popular in cannabis cultivation.

Toxicities and interactions

Main article: Argyria

Excessive intake of silver products may result in a condition known as argyria, one symptom of which is blue or gray discoloration of the skin.[26] The discoloration occurs when silver is deposited in the skin and then darkened by sunlight, just as silver particles in photographic film darken when exposed to sunlight. Localized argyria can occur as a result of topical use of silver-containing remedies, while generalized argyria results from the ingestion of colloidal silver.[27] Argyria is usually permanent, and there is no known effective treatment.[27] While argyria is usually benign and limited to skin discoloration, there are isolated reports of more serious neurologic, renal, or hepatic complications. A death has been reported in the medical literature as a result of colloidal silver use; in that case, a 71-year-old man developed status epilepticus which the authors felt was due to silver toxicity.[27][28]

A number of case reports describe argyria after ingestion of colloidal silver marketed as an alternative-medicine treatment.[29] Colloidal silver may theoretically reduce the absorption of some medications, including tetracycline and quinolone antibiotics and penicillamine, thereby reducing the effectiveness of those medications.[3]

Government regulation

In August 1999, the U.S. Food and Drug Administration (FDA) banned colloidal silver sellers from claiming any therapeutic or preventive value for the product, noting that colloidal silver was being marketed for numerous diseases without evidence of safety or effectiveness.[16] The product now has the status of a dietary supplement in the US; it can be promoted with general "structure-function" claims, but cannot be marketed as preventing or treating any illness.[16] Following this ruling, the FDA has issued numerous warnings to Internet sites which have continued to promote colloidal silver as an antibiotic or for other medical purposes.[30][31]

In 2002, the Australian Therapeutic Goods Administration (TGA) found that there were no legitimate medical uses for colloidal silver and no evidence to support its marketing claims. Given the associated safety risks, the TGA concluded that "efforts should be made to curb the illegal availability of colloidal silver products, which is a significant public health issue."[32]

See also

- Colloidal gold
- Silver Nano
- Silver nanoparticles

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External links

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