

Composed of particles of silver suspended in another medium, such as water, colloidal silver is taken orally, and is claimed to cure at least 650 different conditions, including bacterial, viral and fungal infections, leukaemia, Lyme disease, cancer, malaria, HIV and impaired immune systems.

### Three main products

There are three different forms, each with vociferous proponents.

Non-ionic colloidal silver contains metallic silver particles which are said to ionise and become active once ingested.

Ionic colloidal silver claims to be 0.006-0.015 microns in diameter (highly unlikely), and is sold at a concentration of  $1 \times 10^3 - 1 \times 10^6$  ppm. Its small particle size is said to make it capable of crossing cell membranes and accessing viruses. The claimed particle size is unlikely, although people working on nanotechnology do make such particles, but not with medicinal uses in mind. One product claims to contain hydrogen peroxide and deionised water in addition to ionic silver.

Colloidal silver protein is made from a mixture of silver nitrate, sodium hydroxide, gelatine and water. Mild silver protein (19-23% silver) is said to be less ionisable and thus less effective than strong silver protein (7.5-8.5% silver), which is said to be bactericidal. Health food shops may be selling further dilutions of these two forms of colloidal silver protein.

Silver does not occur normally in humans and in its elemental form is not considered to be extremely toxic, though most of its salts are. Colloidal silver products show some antibacterial

activity in laboratory tests, but this does not mean they are effective if swallowed. Silver products were used in the past to treat gonorrhoea and for infections of the nose and throat, but have been discontinued because they were ineffective and toxic. By 1960, warnings were made that there is no justification for its internal use, either theoretically or practically.

Colloidal silver creams for topical use sometimes contains manuka honey, so any beneficial effects from the silver alone would be hard to prove.

### What happens inside?

When swallowed, silver enters the gut. Once there, smaller particles could form a complex with proteins, while larger particles could simply be excreted. Some may enter the blood and any that is systemically absorbed concentrates in the skin, liver, spleen, and adrenals, with lesser deposits in the muscle and brain.

Colloidal silver is said to work by binding to pathogens and thereby causing the body to get rid of them, though there is no way in which it could differentiate between human and pathogenic cells.

It is also claimed that, as a foreign body, it activates the immune system and that kills all pathogens. In fact, beneficial CD4 and CD8 cells of the immune system are actually destroyed by colloidal silver. Claims that it is stored in the Kupfer cells of the liver where it increases their action are unlikely, as it is more likely to inactivate or kill such cells.

Colloidal silver is said to be able to pulverise pathogens by Brownian motion, which is

characteristic of colloidal silver particles. All this is claimed to happen within six minutes of making contact with the pathogen.

One of the more outlandish claims is that colloidal silver interferes with mitosis, and that one of the daughter cells becomes a stem cell that can migrate within the body and cure anything!

### Serious effects

Contrary to what is claimed by proponents, silver *does* accumulate in the body. Silver salts can cross the blood-brain barrier and accumulate in cells of the brain and spinal cord. Systemic toxicity increases where mucous membranes are disrupted in the gut or on the skin, such as in burns.

Large amounts of absorbed silver accumulate in the skin causing argyria. The first sign of this is a slate-blue/grey pigmentation of the gums; such discoloration can spread to other skin areas and is irreversible.

A candidate for the US Senate turned his skin blue by taking colloidal silver for about two years as a precaution to there being no antibiotics available after the turn of the millennium. He has been nicknamed "Papa Smurf", and although the disfigurement is permanent, it is not considered medically serious - he just looks ridiculous.

There are over 300 cases of argyria in the medical literature and certainly thousands more which have gone unreported. It is usually self-limiting in that when people's skin starts to turn grey, they are usually willing to follow advice to stop taking silver products.

When used as eye drops, it turns the white of the eye bluish-grey or brownish-black. Silver nitrate eye drops have been used to kill gonococci bacteria in newborns, and this is often quoted in support of the product. However, these drops were used once, not repeatedly, and have been superseded by antibiotics.

Skin discoloration is the most common side effect, and one which can have a profound psychological effect. Physiological effects are more difficult to assess, due to the relatively small number of cases that have been covered in the medical literature.

There are suggestions that ingestion of silver can have serious medical consequences, such as neurological defects after prolonged use, including problems with walking and reduced senses of taste and smell. There is also the possibility of silver accumulation affecting the developing foetus, causing anomalies in the ear, face and neck.

Customers are being duped, purchasing either a useless medication or simply very expensive water. Selling silver products can be lucrative. Albert Barnes, invented argyrol, a silver drug used as eye and nose drops in the early 20<sup>th</sup> century. The fortune he made funded one of the greatest collections of modern art, which is displayed at the Barnes Foundation in Philadelphia.

In Australia in 2000, the Federal Court granted injunctions against a manufacturer of devices to make colloidal silver, banning them from making misleading claims about the benefits of taking these products, and enforcing the payment of refunds to purchasers.

*Claire Le Couteur is a medical writer.*

*I thought the [colloidal silver] promoters were ignorant people who had made a terrible mistake, but when I contacted several of them and discovered that they were not interested in hearing my story, they would not change their ads and they refused to include my negative anecdotes along with their positive ones, I knew that they weren't ignorant.*

*They were quacks who were deliberately lying to sell their product.*

*I suspect that if anyone could present good evidence that silver in any amount, form or particle size successfully prevents or treats any serious disease or medical condition, people would line up to be test subjects and salespeople would do the studies and publish them for all the world to see. It would be good business as well as a service to humanity...*

Rosemary Jacobs, argyria sufferer  
<http://together.net/~rjstan/rose2.html>



# the new zealand Skeptics guide to Colloidal Silver

In 1999 the US Food and Drug Agency determined that:

- all over-the-counter (OTC) drug products containing colloidal silver ingredients or silver salts for internal or external use are **NOT generally recognised as safe and effective** and are misbranded
- there is **no substantial scientific evidence** that supports the use of these products for the numerous serious disease conditions that they are claimed to treat
- several products had no silver content at all
- one did not contain the particle size stated on the label
- only one product exceeded purity and stability claims on its label
- **the vast majority were totally useless**
- **some were dangerous to ingest and some were possibly a threat to life**