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Colloidal Silver Research

Mild Silver Protein and Its Effectiveness Against Internal and Topical Infections

by James South MA

Reprinted from **International Antiaging Systems** at www.smart-drugs.net

Silver (Ag) is atomic element number 47, with an atomic weight of 108. It is one of the so-called 'heavy metals', along with lead, mercury, cadmium, and gold. Yet unlike its heavy metal cousins, Silver is surprisingly non-toxic to humans and animals. And unlike the other heavy metals, Silver has a long history of successful medical and public health use dating back 6000 years!

Silver has been used to speed wound healing, treat infections, purify water and preserve beverages. For example, the ancient Macedonians covered wounds with silver plates to speed healing (1), and N.R. Thompson has noted that "The germicidal properties of silver, although not recognized as such, have been utilized since the times of the ancient Mediterranean and Asiatic cultures, references being made to the use of silver vessels to prevent spoilage of beverages, and silver foil or plates in the surgical treatment of wounds and broken bones."(2)

The modern era of Silver usage began in 1893, when C. Von Nageli reported the first systematic investigation into the lethal effects of metals [especially silver] towards bacteria and lower life forms.... To primitive life forms oligodynamic silver is as toxic as the most powerful chemical disinfectants and this, coupled with its relative harmlessness to [animal] life, gives it great potential as a disinfectant.... The term 'oligodynamic'[silver refers to] solutions in which the metal ion concentration is many orders of magnitude below that which would be lethal to higher life forms."(2)

From 1900 to the beginning of the modern antibiotic era - circa 1940 with the introduction of sulfa drugs - Silver was one of the mainstays of medical practice in Europe and America. Various forms of Silver were used to treat literally hundreds of ailments: lung infections such as pneumonia, tuberculosis and pleurisy (3); sexual diseases such as gonorrhea and syphilis (4); skin conditions such as cuts, wounds, leg ulcers, pustular eczema, impetigo and boils (4); acute meningitis and epidemic cerebro-spinal meningitis (3); infectious diseases such as Mediterranean fever, erysipelas, cystitis, typhus, typhoid fever, and tonsillitis (3); eye disorders such as dacryocystitis, corneal ulcers, conjunctivitis and blepharitis (5); and various forms of septicemia, including puerperal fever, peritonitis and post-abortion septicemia (3, 6). (This list does not even begin to exhaust the published medical uses for Silver in Europe and America, 1900-1940).

In 1939 Hill and Pillsbury listed 94 different proprietary Silver preparations in use up to that time (7). However, with the coming of the antibiotic era, Silver rapidly fell into disuse and the medical 'memory hole', as it was replaced first by sulfa drugs, then penicillin (post WWII), and since then by hundreds of specialized antibiotics.

Under the onslaught of antibiotic warfare, the second half of the 20th century witnessed the seeming eradication, or at least control, of most of mankind's ancient plague scourges. Indeed some major infectious diseases have been virtually wiped out in the modern world, (supposedly) thanks to antibiotics. By the late 1980's, antibiotics had so succeeded in controlling/eradicating most germ diseases, that medical researchers and pharmaceutical companies seriously slowed research into new antibiotics, thinking that there was no longer any need for (and not nearly enough 'big bucks' to be made from) newer and better antibiotics. Yet by the 1990's the picture began to change again.

Due to an antibiotic-accelerated Darwinian evolution of microbes, more and more germ species previously controlled by antibiotics began to develop ways to combat antibiotics. This in turn gave rise to so-called 'super-germs', such as killer E. coli, 'flesh-eating' strep A bacteria, multiple antibiotic-resistant tuberculosis bacteria and chloroquine-resistant malarial parasites (8, 9). The overprescription of antibiotics by doctors under pressure from their patients, for ailments where they are useless (e.g. against common viral diseases such as cold and flu); the failure of patients to take the full course of their prescribed antibiotics (allowing germs to recover and develop antibiotic resistance); and the widespread use of low-level antibiotics in animal feed to increase farmer's profits (40% of U.S. antibiotics go into animal feed), have all helped create antibiotic-resistant bacteria (8, 9).

Some common (and dangerous) germs such as Staph aureus (found especially in hospitals) are now known to be resistant to all but one antibiotic-vancomycin - and soon are expected to be vancomycin-resistant too (8,9). "In 1992, 13,300 hospital patients died [in the U.S.] of bacterial infections that resisted the antibiotics fired at them, says the CDC (8)."

Thanks to NAFTA, widespread international air travel, eco-tourism to exotic third-world forests and islands,

and massive migration of third-world peoples to Europe and America, hosts of exotic diseases once isolated to small areas of the planet are now showing up all over (8, 9). Malaria is once again returning to the U.S. The exotic and deadly Ebola virus has broken out in a lab in Maryland. Shigella (which causes dysentery) was practically unheard of in America before 1990, but it is now being spread from contaminated fruits and vegetables imported into the U.S. under NAFTA, and is now routinely seen at clinics in California.

Perhaps the scariest scenario that may present a need for a powerful, broad-spectrum antimicrobial such as Silver is the late 1990's threat of 'bioterrorism.' It is now widely expected by biowarfare and terrorism experts that, whether due to small groups of terrorists, or as a form of warfare by 'rogue'/totalitarian nations such as China, Iran, Libya, N. Korea, Syria, or Russia, it is only a matter of time before 'germ warfare' is unleashed in Europe or America (10). And if the supergerms released have been produced in sophisticated biowarfare labs, they will probably have been genetically altered to make them resistant to the antibiotics normally used to treat that species of germ - e.g. tetracycline/doxycycline normally used to treat Anthrax (the number 1 favorite of 'biowarfare warriors' world-wide) (10). It is interesting to note that silver - both in liquid solution and as an airborne-aerosol - has been known since 1887 to be extremely toxic to Anthrax spores (1, 10, 11, 12). And it is widely reported in the medical literature on Silver that various forms of Silver, often at surprisingly low concentrations, routinely kills germs that are known to be antibiotic-resistant (11, 13, 19, 20).

Most antibiotics have an optimal effectiveness against only a few different disease germs; even broad-spectrum antibiotics may kill only 10-20 different types of bacteria. Also, most antibiotics that kill bacteria will not kill fungus/yeasts, protozoal parasites or viruses; antifungal antibiotics will not kill bacteria, viruses, parasites, etc. And virtually all known viruses are immune to virtually all known antibiotics.

Silver is unique among antimicrobial agents in its broad spectrum of action. It has been claimed to kill some 650 different disease organisms (13). And unlike antibiotics, Silver is an 'equal opportunity destroyer' - it doesn't discriminate, but effectively kills germs of all major types: gram-positive and gram-negative bacteria, spore-forming bacteria, fungus/yeasts, viruses and protozoal parasites. Silver sulfadiazine (Silvadene), used almost universally in hospitals to prevent serious burn infections (11), kills dozens of different bacteria (11, 14, 16); it also kills 95% of 72 strains of herpesvirus (15), as well as the protozoal parasite Plasmodium berghei (malaria) (17). Silvadene also kills various yeasts, including several Aspergillus varieties, Mucor pusillus, Rhizopus nigricans and 50 different clinical isolates of Candida albicans (18).

Electrically-generated colloidal silver [Ag(e)] has been shown to kill dozens of bacteria, including *Providencia stuartii*, a germ already resistant in the 1970's to all antibiotics except amikacin (19), as well as two strains of *Enterobacter cloacae* that were isolated from burn patients and were relatively resistant even to Silvadene (20). Ag(e) has also proved adept at killing various yeast/fungus species at very low Silver concentrations, including *Candida albicans*, *C. parapsilosis*, *C. tropicalis*, *C. pseudotropicalis*, *Torulopsis glabrata* and *Aspergillus niger* (20, 23).

Ag(e) has been shown to kill cysts of the common water-borne protozoal parasite *Entamoeba histolytica* (22). Ag(e) has also killed the protozoa *Paramecium* when exposed to 2.2 PPM Silver, as well as the protozoa *Varicella* at 5.9 PPM Silver (1).

Ag(e) was even somewhat effective in killing Poliovirus in swimming pool water, at the extremely low concentration of 0.015mg Silver per liter of water (15 parts per billion!) (21).

The proprietary silver compounds Certisil and Micropur, used to disinfect water, are effective against Bovine Enterovirus, Vacciniavirus (cowpox), Influenza A and Pseudorabies virus (21).

In short, as pioneering silver researcher Dr. Henry Margraf has stated, "Silver is the best all round germ-fighter we have." (13).

Historically, Silver has been used in 20th Century medicine in a wide variety of forms. It has been used as silver salts (e.g. Silver nitrate, Silver phosphate, Silver iodide, etc.) and Silver compounds (e.g. Silver sulfadiazine, Silver arspenamine, zinc-Silver allantoinate) (11). Many of the doctors using silver in the first half of the 20th century preferred a colloidal form of Silver, either chemically or electrically produced (3, 11). Mild silver protein and strong silver protein (Silver combined with proteins) has a broad spectrum of action. It has been claimed to kill some 650 different disease organisms (13). And unlike antibiotics, Silver is an 'equal opportunity destroyer' - it doesn't discriminate, but effectively kills germs of all major types: gram-positive and gram-negative bacteria, spore-forming bacteria, fungus/yeasts, viruses and protozoal parasites. Silver sulfadiazine (Silvadene®), used almost universally in hospitals to prevent serious burn infections (11), kills dozens of different bacteria (11, 14, 16); it also kills 95% of 72 strains of herpesvirus (15), as well as the protozoal parasite *Plasmodium berghei* (malaria) (17). Silvadene® also kills various yeasts, including several *Aspergillus* varieties, *Mucor pusillus*, *Rhizopus nigricans* and 50 different clinical isolates of *Candida albicans* (18).

Silver salts never achieved widespread use in medicine for several reasons. As Grier notes, "Water-soluble ionized preparation [i.e. silver salts] are generally corrosive, irritating and astringent." (11). Silver nitrate is notorious for being irritating to tissue and staining everything it touches (13). Also, silver salts are often not as effective as colloidal Silver or Silver proteins. For example, Simonetti and colleagues tested extremely

dilute solutions of electro-colloidal Silver [Ag(e)] and Silver nitrate [Ag NO₃] against culture of two bacteria (E. coli and P. aeruginosa), a yeast (C. albicans) and a mould (A. niger). The levels of Silver ion tested were incredibly low: 108 PPB (0.108mcg/ml) and 10.8PPB (0.0108 mcg/ml). Simonetti et al concluded "Our experiments showed that the contact antimicrobial activity of Ag(e) was superior to that of AgNO₃ against gram-positive and negative bacteria, C. albicans, and a filamentous mycete. Our contact tests confirmed the excellent antibacterial spectrum and the high potency of electrically generated silver demonstrated previously.... Anodic silver ions are very effective agents at low concentrations without any detrimental effect upon normal mammalian cells, and the [low] concentrations needed to inhibit the bacteria in invitro experiments have been confirmed clinical data." (23).

Silver salts also tend to be more toxic than silver proteins and colloidal silver. Thus, when Hussain et al tested AgNO₃ on fresh human lymphocytes, they found 90% lymphocyte destruction when they were exposed to 50 micromoles Silver as AgNO₃ for two hours. Yet when lymphocytes were exposed to 1200 micromoles Silver as a Silver-cysteine complex, there was no significant impairment of the lymphocytes at a silver dose 24 times greater than the AgNO₃ provided (24).

Thus, both modern science and early 1900's medical practice favor the use of either colloidal Silver or mild silver protein (strong silver protein contains less Silver than mild silver protein, but is generally more irritating to tissue [11]).

Electrically prepared colloidal silver [Ag(e)] is currently available from many sources, in potencies ranging from 3-5 PPM up to 500 PPM. Equally (or more) important than the silver level is the particle size and degree of dispersion. In a liquid colloid, the Silver does not actually dissolve in the liquid; rather, it exists as a suspension of microscopic particles floating around in the liquid medium. Properly made Ag(e) should contain particles approximately 0.01 to 0.001 microns in diameter (1 micron=one millionth of a meter, or 4/100,000 inch). At this tiny size, each particle is a cluster of perhaps 5-20 Silver atoms, with a positive electric charge. Because the particles are so tiny (and thus light), and because the charged particles repel and 'bounce off' each other, they can defy gravity and remain suspended in their water medium for months - even years when properly stored (away from light, at room temperature). However, over time the Silver particles may gradually absorb onto the walls of the container, gradually lowering the amount of Silver in suspension. The most thoroughly dispersed Ag(e) should be yellow in color, as colloid chemist H. Freundlich noted in 1992: "With increasing degree of dispersion the color of silver sols [colloids] changes from grey green through lilac and red to yellow." (25). Because each Ag(e) particle contains 5-20 Silver ions, the particles act as a time-release mechanism to provide continuous germ-killing Silver ion availability, as single Silver ions gradually break off from their parent microclusters.

MILD SILVER PROTEIN: PROS & CONS

Mild silver protein (MSP) is made by various chemical processes that ultimately create a 19-25% Silver content, the remainder being a protein (11). Like Ag(e), MSP is also made in various potencies from 10 to 500 PPM Silver. The protein acts as a stabilizer and solubilizer for the Silver particles, preventing them from combining with each other to form ever-larger particles that would gradually settle out of suspension. Thus, the shelf-life of MSP is generally longer than for Ag(e). DEDI guarantees its MSP to have a 6-year shelf-life. The Silver protein combination also acts as a time-release mechanism to gradually liberate Silver ions.

DEDI's MSP is produced in their FDA-licensed pharmaceutical laboratory to stringent quality standards, since it is an OTC-licensed 'drug,' Thus one can be more assured of the quality of DEDI's MSP than one can be of the various Ag(e) products produced and sold by the health food industry, as they are normally not produced in registered/licensed pharmaceutical labs.

HOW SAFE IS SILVER?

A hundred years of published clinical and experimental research has demonstrated Silver to be a surprisingly safe substance, unlike its heavy-metal cousins lead, mercury, cadmium and gold. In general, Silver salts are more toxic than Ag(e) or mild Silver protein, but are still relatively non-toxic. Thus Romans notes: "Sollman (1943) observed that silver nitrate in doses of 0.01 [10mg] to 0.1g [100mg] by mouth produces no symptoms and swallowing pieces of [silver nitrate] pencils up to 2.5g is often harmless, but larger quantities cause acute gastritis. These reactions are purely local. From 2 to 30g has caused death within a few hours to a few days; 10g are generally fatal, but the ingestion of 30g has been survived.... For many years silver compounds were considered the most effective agents available for the prevention and treatment of gonorrhoeal infections.... The silver proteinates, especially of the argyrol type [i.e. mild silver protein], have been used extensively in the treatment of infections of the mucous membranes of the eyes, ears, nose and throat. Thus it has been shown that silver compounds are useful germicides and that effective doses are harmless." (12).

Writing in the Lancet in 1912, physician C.E. MacLeod reported based upon his widespread clinical use of chemically-produced colloidal Silver that "They [silver 'colloids' of 500 PPM strength] may be applied topically, hypodermically, intravenously, or by the mouth, and being non-toxic the dose hypodermically is unlimited, and experimental injections of 1 to 2 c.c. of 500 PPM Silver would supply 1/2 to 1mg Silver.

French physician B.G. Duhamel reported on the use of Electrargol (an electro-colloidal Silver providing 400

PPM Silver) also in the **Lancet** in 1912. He stated that "They [Ag(e) preparations] are employed as a rule for the sake of their constitutional effects, for which purpose an injection of from 5 to 20 c.c. [2 to 8 mg Silver] is made into muscle or... into the veins.... Similarly, the colloid [Silver] products can be injected... into the spinal canal (cerebro-spinal meningitis)... the most remarkable effects follow the intravenous injection of these colloids; indeed in some instances the patients have been rescued from apparently inevitable death.... One point stands out prominently, and that is the absolute innocuousness of these [Silver colloids], whether injected into the veins or muscles or into the spinal canal.... the dose is determined solely by the requirements of the case since they are devoid of toxicity."

T.H. Sanderson-Wells, reporting on the successful treatment of a case of puerperal septicemia by injection of "collosol argentum" (a 500 PPM chemical-colloidal Silver), noted that "20 c.cm. of collosol argentum [=10 mg Silver] produced no untoward effects." (28)

Most of the quantitative safety data on Silver comes from a large number of animal studies done in the past century. Thus, "Huebner found that with intravenous injection into rabbits the minimum lethal dose of the non-colloidal silver thio-sulfate was 0.01 to 0.03 gram per kilo, while the minimum lethal dose of colloidal silver was 0.065 gram per kilo." (27) This would equate to an injection dose for a 70kg/154 pound human of 4550 mg.

M.S. Wysor tested high doses of Silver sulfadiazine (30% Silver) in mice every day for a month. He reported that "Doses of 1,050 mg/kg when administered by oral and subcutaneous routes were not toxic.... No deaths occurred within the two experimental groups ... during the 30-day test period.... At the end of the test period, all the animals were sacrificed and tissue sections sent to the Department of Pathology for analysis. Histological studies showed that there was no obvious pathology in any of the groups receiving silver sulfadiazine for the test period. There was no weight loss in any of the groups and no evidence of behavioral changes. None of the animals exhibited diarrhea." (17). A 1,050 mg/kg dose of Silver sulfadiazine would translate into roughly 22 grams of elemental Silver for a 70kg/154 pound person.

Hill and Pillsbury report results of many animal Silver toxicity studies in their 1939 book on Silver. For example, "Lentz has administered a saturated solution of a silver oxide containing 1.52 grams per liter intravenously in doses as large as 4 c.c. three times daily for a period of three weeks to various animals without producing any apparent toxic effects." (7). An equivalent dose for a 70kg human would provide 1190 mg Silver daily.

"Gompel and Henri studied the effects of repeated injections of a dilute colloidal silver solution over long periods in guinea pigs. Using a solution containing 0.25 gram in 1000 c.c. [=250 PPM Silver] they found that the intravenous administration of 1 or 2 c.c. to guinea pigs daily for two months caused no particular symptoms [= approximately 17.5 to 35 mg Silver daily for a 70 kg person]. This was also true in rabbits when 10 c.c. were given intravenously for 10 days [=approximately 88 mg Silver daily for a 70 kg human]." (7).

"To a series of 16 rabbits, massive doses of 66.7 mgm. of silver arsphenamine per kilo were administered [intravenously] at intervals from three to seven days. In a series of four rabbits, relatively excessive doses of 10 mgm. per kilo were given. The minimal dose given was a total of 227 mgm. of the compound in 47 days.

The silver content of the drug was 14.5%.... Hooper and Meyers found that silver arsphenamine did not produce any diffuse kidney lesions and that the... cells of the liver were in all cases well preserved. The majority of the rabbits showed a gradual increase in hemoglobin and red blood cells during the experiment, while the white cell count and the differential cell count remained within normal limits.

From this study it is seen that in spite of the administration of silver arsphenamine in amounts far exceeding that employed clinically [in humans], no significant toxic effects were observed." (7). The total silver amounts used in this experiment would equate to a minimum of 2304 mg Silver to a maximum of 23.98 grams Silver for a 70kg human.

By now the point should be clear: especially when taken orally, silver is a reasonably non-toxic metal for humans, and is even fairly non-toxic when injected, especially at the modest dosage level of 10 mg daily or less. Early 1900's silver injection medical protocols typically provided 1-10 mg Silver daily, sometimes more.

ARGYRIA: THE DARK (BLUE-GREY) SIDE OF SILVER

Given the broad range of silver's efficacy against germs - even antibiotic-resistant ones - and its relatively high degree of safety, one might wonder why Silver isn't routinely used by every doctor and hospital in the world today.

Aside from the seemingly cynical (but all too true) reason that the medical-industrial complex would lose revenue (sickness pays, wellness doesn't, and a single pill of a modern 'high-tec' antibiotic typically sells for \$10-20), there is a more legitimate cosmetic reason for caution in Silver use: the phenomenon known as argyria. When sufficiently large quantities of Silver accumulate in the body, some of it accumulates just beneath the surface of the skin, which may lead to a permanent bluish-grey tinge to the skin.

As Hill and Pillsbury (both M.D.s) note in their massively researched (601 references) 1939 book **Argyria**, "A striking feature of argyria is the absence of any evidence that the deposits of silver produce any significant physiologic disturbance of the involved organs or tissue.... Aside from the [Silver] pigment deposit, the gross and microscopic appearance of the involved tissues is normal. Argyria is, therefore, of significance only from the standpoint of cosmetic appearance." (7).

In their chapter on Silver in the 1986 Handbook on the Toxicology of Metals, Fowler and Nordberg also remark that "argyria... is bluish-grey discoloration of the skin.... Although not esthetic, this condition is considered harmless.... a total dose of 1-8 g Silver would be required to induce the condition in a long-term inhalation exposure situation. The dosage required to induce argyria by ingestion seems to be somewhat higher, i.e. between 1 and 30 g of soluble silver salts...."(29).

Hill and Pillsbury could only find 239 reported cases of argyria by 1939, in spite of silver's widespread medical and over-the-counter use in America and Europe during the previous 40 years. Only 16 cases occurred from less than one year's chronic use of Silver; about half occurred with 3 years or less of chronic Silver use; and about half of all cases involved chronic Silver use ranging from 3 to 25 years. Where the published information (214 cases) provided data on the Silver compound used, 55% (118) of the argyria cases were caused by Silver nitrate; 13% (28) were caused by Argyrol, a mild Silver protein; 9% (19) were caused by Silver arsphenamine; 6% (13) were caused by Collargol, a chemically produced colloidal Silver, and various other products caused the remainder of reported argyria cases (7). In their summary Hill and Pillsbury report that a safe (with respect to argyria) total dose of the intravenous drug Silver arsphenamine would be 6 grams (.9 grams Silver), while with Silver nitrate "the danger of argyria is very slight if the total amount injected by mouth is below six grams [3.8 grams Silver]." (7).

To put this in perspective: if one assumes that electrocolloidal Silver and mild Silver protein are equally prone to cause argyria compared to Silver nitrate (and they probably are actually less prone to promote argyria), then it would take 11.5 years of daily oral use of two tablespoons of 30 PPM Silver to reach the 3.8 gram Silver threshold. Thus the risk of developing argyria from occasional use of Silver to treat specific infectious conditions must be considered virtually non-existent. I have used colloidal Silver intermittently since 1994, sometimes taking 2-3 tablespoons of 30 PPM Silver daily for months at a time, consuming about 250 mg Silver total, and I do not exhibit the slightest hint of argyria.

ARGYRIA: REDUCING THE RISK

The two simplest methods to reduce argyria risk are:

1. Do not use AgNO₃ internally - it's the best reported promoter of argyria.
2. Limit use of colloidal Silver /mild Silver protein products to at most several weeks to several months at a time. Do not take oral (or intravenous or intranasal) Silver on a permanent, ongoing basis unless carefully monitored by and under the supervision of a physician who is knowledgeable in Silver use and argyria.

The dietary supplement NAC (N-acetylcysteine) may also provide significant protection against Silver accumulation and thus argyria. Fowler and Nordberg state that "Alexander and Aeseth (1981) reported that rats injected intravenously with silver nitrate excreted silver in the bile mainly bound to a low molecular-weight complex which appeared to be glutathione." (29). Glutathione (GSH) is a tripeptide composed of glutamic acid, glycine and cysteine. Based on their study of the protective effect of NAC against various toxic agents, Dawson et al reported: "The protective effect [of NAC] in some cases is due to the free sulfhydryl group which N-acetylcysteine contains, and in other cases it is due to its role as a precursor for cysteine in [GSH] biosynthesis." (30).

Bergstrom and colleagues remarked that "...oral NAC in fact offers prompt availability of thiol groups needed for [GSH] biosynthesis in the hepatic cells where the need is highest." (31).

Lorber et al stated that "Our in-vitro studies demonstrated that NAC effectively complexes gold, mercury and silver.... Our [clinical] findings suggest that NAC may be a promising and effective treatment of gold [and thus presumably Silver] intoxication.... The use of N-Acetyl cysteine may thus afford better detoxification for... heavy metal poisoning than other available agents in current use." (32). In order to avoid cancelling out the microbicidal effect of Silver, it would probably be best to wait until a given course of Silver treatment is complete, then begin taking 200-600 mg NAC two or three times daily with meals. This will enhance clearance of any residual Silver from the body, thus reducing the risk of argyria.

WHAT IS SILVER USED FOR?

Colloidal Silver and mild Silver protein (MSP) are useful in treating virtually any infectious condition; they were used to treat literally hundreds of infectious conditions from 1900 to 1940 (3, 4, 5, 6, 7, 11, 12, 28). In a 1998 report on its MSP product Silvicidal ES®, DEDI states that "Trials with Silvicidal ES® formulations have shown this product to be effective against general internal and topical infections, namely:

- Ear infections
- Thrush/Candida (consult a physician before use)
- Common Colds
- Staph infections
- E. Coli infections
- Intestinal infections
- Sinus infections
- Leukemia
- HIV
- Lyme's disease
- Viral infections
- Herpes
- Gingivitis
- Food poisoning

NOTE: Silvicidal ES®, if taken at onset of common cold, is effective, however, it is not effective once the cold has set in. However, Silvicidal ES® is effective with most flu varieties after the flu has set in. In both cases, flu and the common cold, Silvicidal ES® works best if taken as a preventative, or at the first sign of symptoms." Also in the Silvicidal ES® report, Dr. J.J. Cardot states that "Due to the non-toxic properties of Silvicidal ES®, the physician is prudent to prescribe doses that are higher than needed rather than giving too small an amount. The exception... is when a systemic fungal infection is known or suspected. In these cases one should start with a low dose (116 teaspoon per day) for three days; increasing the dose in 116th increments until the infection is cleared from the body. [This] approach will prevent a severe Herxheimer reaction. The dose suggested should be adjusted to the severity of the symptoms and the general condition of the patient's overall health."

USES AND DOSES

Silver may be dropped into the ear several times daily for ear infections. Silver may be snorted into the nostrils from a nasal squirt-bottle for sinus infections or to abort head-colds. A dilute Silver solution (5-10PPM) may be dropped into the eyes to treat conjunctivitis or to soothe inflamed, itchy eyes (there may be a brief initial mild stinging sensation). Silver may be swabbed or rubbed (possibly mixed with aloe-vera gel, ideally fresh-squeezed from an aloe plant) onto minor burns, cuts, scrapes, wounds, etc. to prompt healing and prevent heal/infection. Silver may be massaged into gums several times daily for dental infections.

Silver is also useful to treat animal (farm or pet) infections as well, although dose should be scaled down or up (compared to human weight/dose) depending on the weight of the animal.

Silver has also been used as a water purifier since 1900 or so; since the 1930's Silver has been used to impregnate water filters to kill germs in the water or which might grow in the filter medium ([11](#), [12](#), [21](#)). The consensus of water treatment experts is that as little as 0.05 to 0.5 PPM is sufficient to kill most bacteria within several hours ([11](#), [12](#), [21](#)). Protozoal parasites (Giardia, Entamoeba, Paramecia, etc.) may require higher levels - e.g. 5-30 PPM ([22](#)). To germicidally purify water of doubtful quality, add 1 to 3 teaspoons of 10-50 PPM Silver to a pint of water; stir thoroughly and let stand for several hours. This is only a general guideline - when in doubt increase the Silver dosage as you see fit.

To conclude this report on a personal note: I have found Silver to indeed be a 'master germicide.' I have personally aborted colds with liquid Silver (I have just done it again while writing this report); I have had great success controlling candida with Silver. I routinely use liquid Silver or Silver gel for cuts, burns, etc. and have found it to be almost immediately soothing, as well as anti-infective/pro-healing. My wife routinely squirts Silver into her nose when flying to avoid catching cold from the plane's germ-laden recycled air.

The most amazing case of Silver use which I've had personal knowledge involved an 83 year old woman who was suffering severe septicemia (infectious blood poisoning). Her doctors were unable to control the raging infection and had sent her home, expecting her death in 48-72 hours. Her husband contacted an intermediary, through whom I recommended trying Silver. The woman was immediately put on one tablespoon of 5PPM colloidal Silver three times daily. Within 24 hours her septicemia began to disappear, and within 48 hours her septicemic crisis was over, and she did not die as 'expected.'

TECHNICAL NOTE

Most Silver preparations express their Silver content in parts-per-million (PPM). 1 PPM = 1 microgram (mcg) Silver per cc = 5 mcg Silver per teaspoon = 15 mcg Silver per tablespoon. 30 PPM = 30 mcg Silver per cc = 150 mcg Silver per teaspoon = 450 mcg per tablespoon, etc.

IAS NOTES

Discovery's Silvicidal ES contains 337 mcg Silver per 1/4 ounce (measuring cup provided), or 337 PPM per 1/4 ounce. Dosages can be reduced by dilution with water or smaller quantities as required.

Chet's Additional Resource(s)

[Bioterrorism and Colloidal Silver](#)

My special report on ancient and alternative treatments to catastrophic diseases contains an excellent section on how colloidal silver.

[How to Make Colloidal Silver for Less than \\$1 a gallon](#)

In this informative and interesting article, you'll learn about colloidal silver and how to make a home generator to produce your own colloidal silver for less than a buck a gallon.

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