"Colloidal Silver" from Chapter 3

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CHAPTER 3: Complementary Therapies

COLLOIDAL SILVER

History of Colloidal Silver

Silver in various forms has been used for healing for centuries. The ancient Greeks and Romans used silver jars to keep stored liquids fresh. They wore silver frequently, perceiving that it maintained health. European royal families did not become as infected by the plague because they used silver utensils and ate off silver plates. And during the 1800s, American pioneers kept silver dollars in their milk jugs to prevent the milk from fermenting or spoiling. Silver coins were also dropped into water barrels to impede the growth of microorganisms and algae.

One of the first recorded medical uses of silver dates back to 1834, when a German obstetrician named F. Crede administered a 1% silver nitrate solution into the eyes of newborns to prevent blindness caused by eye infections. This practice continues today in hospitals around the world. The Russians, and the National Aeronautics and Space Administration (NASA) in the United States, revolutionized the water purification industry by using silver ions to purify the water in spacecraft. Today, water filters impregnated with silver are standard equipment in water filters.

The bulk of serious scientific study on silver appears to have begun in the early 1900s, with research correlating low plasma silver levels with infections. (This suggests that silver could be an essential trace mineral.) Silver continued to be used therapeutically until the late 1930s. In addition to being used in the eyes, it was orally ingested, spread inside the nasal passages, applied to wounds, and rubbed into the skin. Silver proved to be an effective healer of infections, both externally and internally.

Then from around the 1940s, silver as a healing agent became hard to find and its merits were no longer publicized. This was primarily because the pharmaceutical industry began to create and promote synthetic antibiotics. But silver's fading popularity was also related to the form in which it was used: it was often combined with other substances to form compounds, resulting in silver proteins, silver nitrate and other silver salts. Many of these compounds, while fairly effective, were still less effective than today's pure colloidal silver or ionic silver, which are not combined with other elements. However, reliable technology to make good quality silver fluid (which today we call *colloidal silver*, or *CS*), was not easily available.

In the United States, colloidal silver is not approved for medical use. Companies that sell CS or the equipment to make it are forbidden by the FDA to tell their customers about colloidal silver's healing properties. Interestingly, this has not stopped major pharmaceutical companies from producing *other* silver products that *are* approved for medical purposes. These products include silver gels, for cuts, burns and wounds (silver sulfadiazine cream, a compound, is extensively used); silver coated bandages, widely and successfully used in hospital burn units; and various silver compounds, for other purposes. The existence of these products makes it difficult for government

agencies to deny the health benefits of silver any longer.

Disabling Microbes

Colloidal silver is a broad-spectrum, safe and effective substitute for allopathic antibiotics. Although there is still some question as to how exactly colloidal silver works, research conducted since the 1970s has shown that silver:

- Deactivates the enzymes that microbes need for respiration. Since the microorganisms are suffocated rather than poisoned, resistant strains will not form, as happens with allopathic antibiotics.
- Oxidizes the pathogen, in a way similar to that of hydrogen peroxide or ozone.
- Binds to bacterial cell walls, which prevents the microbes from functioning properly and ultimately causes their death.
- Replaces compounds in the cell wall that microbes require.
- Repairs broken DNA of a virus—thus rendering it dysfunctional, since a virus by definition can only function inside a host if its DNA is incomplete.

Modern folklore states that CS kills over 650 pathogenic microbes, a number whose precise origin is unclear. However, it cannot be contested that silver is a potent germicide. Scientists have proven that CS destroys virtually all bacteria, viruses, and most other single-celled pathogens within minutes. An article from a 2006 issue of *the American Journal of Nursing* states:

> Silver is a broad-spectrum agent effective against a large number of Gram-positive and Gram-negative microorganisms, many aerobes [living in the presence of oxygen] and anaerobes [living in the absence of oxygen], and several antibiotic-resistant strains such as methicillin-resistant S*taphylococcus aureus* and vancomycin-resistant enterococci.[1]

Although virtually all bacteria and viruses are killed by CS, its effect on fungi, mold, amoebas and protozoa varies. Silver cannot kill multi-celled worms and other, similarly large parasites, but it can kill the bacteria and viruses living *inside* the parasites. And although CS seems to help prevent viral infection, it can be less effective once an infection has become established. However, CS does prevent secondary infections from bacteria and other sources.

Colloidal silver affects single-celled microorganisms *as long as it physically touches them*. Therefore, even though CS cannot disable pathogens in solids such as bone and feces, it *can* easily disarm them in liquids such as water, blood, urine and lymph. If you take CS on an empty stomach, it will directly contact any *Helicobacter pylori* that's present (*H. pylori* is responsible for ulcers and stomach cancer). And CS traveling directly to a relatively empty gut, with no stool to block its passage, can kill unwanted microorganisms there that cause food poisoning and dysentery. (Similarly, in the laboratory, silver cannot affect microbes in a solid, gel-like nutrient agar, but it *will* affect microbes in a nutrient *broth*.)

Just a few conditions that have been partially or completely eradicated by CS are gastrointestinal disorders (including diverticulitis and salmonella), hepatitis and other liver conditions, Lyme disease, malaria, pancreatitis, respiratory problems such as emphysema, shingles and other

[1] Michel Hermans, "Silver-Containing Dressings and the Need for Evidence." *American Journal of Nursing* (December 2006) 106(12): 60.

conditions caused by the *Herpes* virus, and even the SARS virus.

Recently, researchers at the University of Texas and Mexico University began using silver nanoparticles to kill *Staphylococcus aureus*. Then, in the *Journal of Nanotechnology*, they reported their groundbreaking findings that silver nanoparticles kill HIV-1, and that they expect silver to kill virtually every other virus as well! The silver particle size ranged from one to ten nanometers. *The silver particles killed 100% of the HIV-1 virus* (incubated at 98.6ºF or 37ºC) *within 3 hours.* The researchers wrote:

> The strong toxicity that silver exhibits in various chemical forms to a wide range of microorganisms is very well known. . . . Silver nanoparticles interact with the HIV-1 virus via preferential binding to the gp120 glycoprotein knobs. Due to this interaction, silver nanoparticles inhibit the virus from binding to host cells.[2]

For the HIV study, the scientists used specially manipulated, minuscule units of silver called *nanoparticles*. Although most people do not have access to such specially prepared silver particles, a solution comprised of small-particle sized silver *can* be made quickly and inexpensively by anyone. (And, in this case, the colloidal silver will have effects similar to those of the nanoparticle-sized silver.) In a moment, I'll tell you how you can make your own silver fluid. But first, I want to discuss how silver can eradicate cancer, and its effects on immune response.

[2] Jose Luis Elechiguerra et al., "Interaction of silver nanoparticles with HIV-1." *Journal of Nanobiotechnology* (2005) 3: 6. Published online 2005 June 29. doi: 10.1186/1477-3155-3-6. (October 23, 2005).

Enhancing Immunity

For a decade or so, the chemists, holistic health aficionados, and adventurous do-it-yourselfers in the colloidal silver community enthusiastically focused on the microbe-killing power of CS. Then they discovered that in addition to killing one-celled microorganisms, silver supports immune function.

New research, published in the European journal *ChemMedChem*, shows that silver modifies cytokines, the enzymes involved in cell growth and movement. This modification of cytokines leads to reduced inflammation and an increased rate of healing. Since the inflammation response contributes to—or in some cases, directly causes—some diseases, using silver for healing shows great promise. Not only can cells function more normally, but if the immune response is more efficient, viruses can be eliminated even more quickly.

People with serious illnesses may be deficient in silver. Therefore, this trace mineral can be regarded as an essential micro-nutrient for the body.

Normalizing Cancerous Tissue

Silver's immune-supporting function is directly related to its ability to reverse the progression of cancer cells. And it was discovered over 30 years ago, by medical doctor Robert O. Becker. A highly credentialed clinician, professor and researcher, Dr. Becker taught medicine at Upstate Medical Center in Syracuse, New York; was Director of Orthopedic Surgery at the Veterans Hospital, also in Syracuse; and is the respected author of two books related to electromedicine.

Dr. Becker began working with silver in 1971. He was trying to ascertain whether minute amounts of electrical current could

cause rats to regenerate limbs, hoping that this would prove useful in healing broken bones in humans. Becker used silver for the electrodes, instead of other metals, because he believed that silver was not chemically reactive with the body's tissues, and that it would also transmit current more efficiently.

After numerous tests and hypotheses, Becker concluded that the silver ions produced by the current, rather than the current itself, were responsible for stimulating the normal growth of human tissue, as in the regeneration of bone and skin. The silver ions reduced healing time by 50%. A paper published by Becker and two colleagues in 1976, "Electrically Generated Silver Ions: Quantitative Effects on Bacterial and Mammalian Cells,"[3] described how, compared to an inferior *compound* (silver sulfadiazine), silver ions inhibited the proliferation of bacteria between 10 to 100 times more effectively—and without any negative effects on normal mammalian cells. (I will discuss in more detail, shortly, the chemistry of CS and explain how it's different from silver compounds.)

But Becker discovered something even more startling about the benefits of silver: when injected, *it caused abnormal cancerous tissue to become normal again*. Dr. Becker wrote, years later:

> We found that as human fibroblast cells (which are common throughout the body) were exposed to the electrically generated silver ions, they dedifferentiated. They were then able to multiply at a great rate, producing large numbers of primitive, embryonic cells in the wound even in patients over fifty years of age. These "uncommitted" cells were then able to differentiate into whatever cell types were needed to heal the wound. *So what we were in fact doing was turning on regeneration in human tissues*.
>
> . . . This circuitous pathway led us back to one of our original aims, the control of cancer growth. If the electrically generated silver ion dedifferentiated normal human fibroblast cells, would it also dedifferentiate human cancer cells? . . . We did find that some human cancer cells in culture appeared to dedifferentiate when exposed to these silver ions. . . .
>
> It is important to realize that this is not simply an electrical effect, but the result of the *combined action of the electrical voltage and the electrically generated silver ions*. [emphasis added][4]

Most laypeople and even doctors have not heard of Dr. Becker. As his experiments and discoveries became more promising and public, funding for his research was abruptly withdrawn.

In addition to being ingested and applied externally in poultices, CS can be injected intra-muscularly or intravenously. Health practitioners generally add a very pure silver solution to sterile physiological saline, or to Ringer's Solution that contains 9000 ppm sodium chloride. The late Bob Beck reported that tumors and polyps shrink when CS is injected directly into them.

[3] T.J. Berger et al., "Electrically Generated Silver Ions: Quantitative Effects on Bacterial and Mammalian Cells." *Antimicrobial Agents and Chemotherapy* (February 1976) 9(2): 357-358.

[4] Robert O. Becker, *Cross Currents: The Perils of Electropollution, The Promise of Electromedicine.* (New York: Jeremy P. Tarcher/Perigree Books, 1990), 164-166.

Contraindications

If made and used properly, colloidal silver has no negative effects on humans, animals, or plants. The only caution I would advise is that very high amounts of colloidal silver use up the body's storehouses of selenium, similar to the way an oversupply of certain minerals use up other minerals. To guard against this, take extra selenium. Selenium is most abundant in Brazil nuts and meats. Ultimately, however, the amount of selenium in the soil determines how much of the mineral will be in plants (and the animals who eat the plants).

As already mentioned, if CS is taken on an empty stomach, it will travel straight to the intestines. This is helpful if you have, say, food poisoning or dysentery. But what if you don't? How might CS affect the *beneficial* intestinal flora? As reported in informal polls, the majority of CS users do not experience digestive upset, and a few do. You can always re-establish the intestinal flora population by eating yogurt or taking flora supplements. Again, if you are drinking CS when there's food in your stomach, the chances that you will de-populate your intestinal flora are slim. (Septic tanks, which house digestive waste, utilize friendly flora to break down the fecal material. So, if your home uses a septic system, don't pour CS down the sink or toilet.)

Almost everyone can use silver preparations, except of course those with an allergy to silver. *Do not use CS if you are allergic to silver.* Silver allergies are rare, but for those who are allergic, reactions can be severe. As a precaution, put a few drops of CS on your tongue and wait for an hour. If there is no discernible reaction, try again with ½ teaspoon or so, held in the mouth for a few minutes before swallowing. If you are indeed allergic, your response will be rapid and obvious. (Many people who are allergic to ingested substances find that the pulse begins to race.) Significantly, records of allergy to silver focus on silver jewelry. It is not the silver to which people react, but rather, the nickel that's included in the mix of metals to make the naturally soft silver harder and more durable. An allergy to nickel-containing silver jewelry will manifest in red skin that burns and itches.

An allergic response should not be confused with symptoms of die-off, also known as a *Herxheimer* reaction. This response is named after Doctors Karl and Jarisch Herxheimer, two physician brothers who identified it near the end of the 19th century. They observed that due to an overload of toxic waste from dead and dying pathogens, symptoms often worsened before people began to feel better. Large amount of CS can be so efficient at killing pathogens, that sometimes the body is a bit overloaded. Cleansing reactions typically resemble the flu, although many different symptoms can manifest from waste materials that the body is trying to expel. Toxic material is eliminated in many ways: via the colon, lungs, sinuses and skin. Therefore, the symptoms can be as varied as diarrhea, excess mucous production and coughing, post-nasal drip and stuffiness, and very itchy rashes. Keep in mind that if toxins are emerging through the skin, they are circulating in the blood too; and if toxins are that plentiful in the bloodstream, they might be putting an extra strain on the liver and kidneys. Since many people who are ill already have a weak liver and/or kidneys, it seems wise to proceed slowly. (This is good advice when you are doing any detoxification program.)

A cleansing reaction can feel quite uncomfortable. It can even feel scary to those who are not used to detoxification programs and don't understand how to interpret the symptoms they feel when the

body is expelling toxic wastes. If this occurs, simply reduce or temporarily stop the CS until the healing crisis is over, and then begin taking CS again, but in smaller amounts. If you are feeling weak before you start, begin with a minuscule amount—¼ teaspoon is plenty!—and slowly increase the amount according to your tolerance. Carefully monitor your responses, and reduce or stop taking CS entirely if necessary. I remember that when I began taking CS, all I could manage at one time was ½ teaspoon in eight ounces of water, no more than three times a day. Now I can drink an entire glass of pure CS at a time.

Making Colloidal Silver, and Particle Size

CS is a nearly tasteless, virtually clear fluid. It's made by passing a modest electric current through two parallel wires of at least 99.9% pure silver, which are parallel and partially immersed in distilled water. This process yields a concentration of silver from 5 ppm to 15 ppm.

A number of companies sell reasonably-priced, good quality CS generators (see Resource Appendix). There are also plans on the Internet showing how to make your own generator for about ten dollars in parts. Mass manufactured generators come with various switches, meters for measuring strength of the solution, and other desirable features.

To make safe, effective and stable colloidal silver, at least 99.9% pure (*not* sterling) silver must be used. Common silver alloys such as sterling are allowed to contain large proportions of nickel, copper, and other elements; these can be toxic if ingested. Also, distilled water must be used. Spring, tap, well, filtered, or other common forms of drinking water contain dissolved minerals and other unknown impurities. These impurities are unwanted because not only might they contaminate the product, but they add excess electrical charge that speed up the process too quickly and create silver particles that are too large to be ingested.

For the same reasons, never add salt or baking soda to the water when making CS! These items produce an inferior form of silver solution that may cause one's skin to turn gray. I will discuss this in detail shortly. If you want to make CS more quickly, use some already-made CS as a "starter," much as one adds a bit of already-made yogurt to milk to accelerate the fermentation process. Or, heat the water in a glass or ceramic pot. Heat makes the water more conductive, and will thus speed the CS-making process.

A safe and effective silver preparation will contain particles less than .015 microns in diameter, as well as silver atoms and ions with diameters as small as .230 nanometers. Both the particulate and ionic fractions contribute to its effectiveness, are readily absorbed and transported throughout the body, and are safely excreted by the eliminative organs.

The term *colloidal silver* has been used by many different researchers, vendors and users to refer to a number of different medicinal preparations that feature some form of silver, suspended or dissolved in a liquid (usually distilled water). One authority on colloidal silver explains the meanings of various terms:

> The word "colloidal" refers to a condition where, in this case, a solid particle is *suspended* in a liquid (silver in water). The solid particles are too large to be considered *dissolved*, but are too small to be filtered out. This colloidal condition is most easily detected by what is called the "Tyndall effect," where a narrow beam of light is shined through the liquid to produce a cone shaped

> dispersion of the light. The particles so illuminated also exhibit a random, zig-zag activity called "Brownian motion" when observed under a microscope. When something is completely dissolved, both the Brownian and Tyndall effects disappear.
>
> The word "ionic" refers to a condition where a particle has an electric charge. In the case of "electro-colloidal" silver, this electric charge is *always* positive. Silver will not form a negatively charged ion. So, the truth is that electro-colloidal silver is *both* colloidal and ionic. It is considered colloidal because of the particle *size* and it is considered ionic because of the particle *charge*. In fact, most of the biological studies suggest it is colloidal silver's ionic characteristics that make it such a good germicide. It is also interesting to note that the old chemistry books make no distinction between the colloidal and ionic states of the electro-colloidal metals.[5]

The CS community agrees that a more accurate name for "colloidal silver" is *electrolytically isolated silver* (EIS), since technically, colloidal silver consists of ions that are miniscule silver particles. However, since "colloidal silver" is used generically by the majority of users all over the world, I will use the same term. Please note that a silver fluid made by the EIS process is *very different* from mild silver protein, a product made by chemically combining silver with proteins or other additives. This will be explored more fully in a moment.

Marshall Dudley, an expert on the chemistry of colloidal silver, points out that both ionic and particulate (larger-particle, or colloidal) silver kill pathogens. There are some differences between them, however.

> Ionic promotes healing and prevents scar tissue by allowing injured cells to revert to stem cells. Colloidal helps prevent argyria [a blue-gray discoloration of the skin] by providing seeds for the silver compounds that are eventually made in the body from ionic, something to plate out on. Best is a combination of them both, with about 10% to 20% being colloidal.
>
> Smaller particles affect viruses better than larger ones. Lower ppm EIS tends to have smaller particles. Higher ppm EIS can have a little hydrogen peroxide added to it to make the particles smaller, and thus be even more effective.[6]

Argyria and CS Toxicity Propaganda

Silver itself has been shown to be harmless to normal human tissue. *No toxic levels are known for properly made colloidal silver*. As the *Journal of Burn Care Rehabilitation* reminds us, any possible toxicity results from the salts or complexes that are used to *deliver* the silver.[7] This is why using pure silver is the ideal approach to avoid local toxicity.

Despite the nontoxic nature of CS, this doesn't stop the pharmaceutical industry—and its numerous allies, including the FDA—from circulating misinformation about CS. This acts as a strong deterrent to people from making and using this inexpensive and effective ingredient.

[5] Peter A. Lindemann, "A Closer Look At Colloidal Silver," www.elixa.com/silver/lindmn.htm (January 17, 2008).

[6] Marshall Dudley, public Internet post, January 29, 2008.

[7] *Journal of Burn Care Rehabilitation* (1999) 20: 195-200.

The only known side effect of exposure to large amounts of silver metal or its compounds is a purely cosmetic condition known as argyria, a blue-gray discoloration either of the skin or of the conjunctiva of the eye (where it is called argyosis). Although cosmetically upsetting, there is no tissue damage or interference with any metabolic function.

Argyria occurs when large amounts of silver are ingested or absorbed over a long enough period of time so that the body's natural ability to excrete the metal through the urine and feces is overwhelmed. Particles of the metal and its salts are deposited in the skin and other tissues, forming photosensitive compounds that darken upon exposure to bright sunlight.

Argyria is quite rare. Most recorded cases are the result of occupational exposure and the use of doctor-prescribed high concentration silver salts during the early 20th century. The only other modern cases involve high concentration silver salt solutions or other compounds. There are a handful of reports of argyria occurring in Caucasians, but no known cases among other races.

Argyria is thought by mainstream clinicians to be irreversible, but current work by some experimenters has shown positive results for reducing or eliminating the discoloration through detoxification and chelation therapies.

Recent pseudo-scientific articles loudly proclaim this one potential "side effect" (just one, compared to toxic drugs!), but in every single one of these "scare" pieces, the authors fail to disclose one or more pieces of vital information:

- Most of the reported cases of argyria occurred in the 1920s and 1930s and involved prescription pharmaceutical products.
- The technology used in early colloidal products was very crude, resulting in very large particles, high concentrations, and large doses of silver.
- Most early preparations were concentrated silver *compounds,* again resulting in very large doses of silver. Some of the more common silver compounds are silver nitrate, silver sulfide, silver chloride, silver sulfadiazine, and various silver proteins.
- Silver compounds have only a *potential* to cause skin discoloration; they usually did not cause discoloration.
- In order for skin discoloration to take place, the product has to be used faithfully every day over a long period of time (2 years or more), and the amount taken must be substantial.
- The specific type of product used, its method of manufacture, and/or quantities consumed are not mentioned. Also concealed are obvious flaws in the product's quality and manner of use, as well as the differences between products that cause argyria and properly made CS.

Three widely publicized cases in the US illustrate the above. The first case involves a woman, now in her sixties, who was prescribed nose drops at age 11 for allergies. By age 14, she had turned markedly gray. She cannot identify the exact medicine or the quantities she used. Nonetheless, she has become a vocal opponent of all forms of silver. Although she presents a great deal of solid information on argyria, none of the cases reported, even from the modern era, involve low-concentration electrolytically produced CS.

In the second case, a 2002 US Senate candidate from the state of Montana developed a slight bluish discoloration that was visible on his fair skin under certain

lighting. This discoloration came from his homemade so-called colloidal silver. It was not widely publicized that he made his brew with tap water, brewed his batches for one hour until they looked like coffee, and drank eight ounces a day for two years.

The third incident concerned a fair-skinned man whose skin had turned markedly blue after many years of ingesting, and putting on his skin, a homemade silver solution he had created using salt. In 2007, major US news networks interviewed Paul Karason about how he had adapted to life as a blue-skinned man, as he was not always accepted by others. What began as a human interest story on tolerance quickly turned into a review of the presumed dangers of colloidal silver, since that's what had caused Mr. Karason's skin discoloration. As of this writing, it's unclear whether Karason will make future batches of CS differently, or avail himself of help that has been offered to him by various individuals and companies involved with CS.

The mainstream media usually prefers to present sensationalized stories about holistic technologies instead of seriously investigating them. I have never seen TV report the findings of Dr. Samuel Etris, a senior consultant at the Silver Institute, who states that there has never been any allergenic, toxic or carcinogenic reactions to CS. It's also doubtful that TV viewers are aware of the World Health Organization's upper limit recommendations for silver:

> It is unnecessary to recommend a health-based guideline value for [CS and other substances in the same category] . . . because they are not hazardous to human health at concentrations normally found in drinking-water.[8]

The levels of colloidal silver that are drunk for therapeutic purposes are somewhat higher than those found in drinking water. So, for the purposes of our discussion about argyria, *how much* silver are we talking about in order for it to be a toxic load?

Alexander G. Schauss, PhD, is a former professor at John Hopkins University, and the director of the *International Journal of Biosocial Research* at Life Sciences American Institute for Biosocial Research in Tacoma, Washington. An innovative researcher and expert on the effects of silver, Dr. Schauss explains in detail how and why the argyria scare became so widespread.

> Most cases of argyria reported in the medical literature over the last 100 years involved chronic intravenous or intramuscular use of the silver preparations, most often involving a silver drug prescribed by physicians which in most cases contained silver nitrate. Other cases of argyria reported in the medical literature involve application of silver preparations used for many months or years in the treatment of the eye or vagina for certain diseases. We could not locate a single case of orally consumed colloidal silver manufactured in the last 25 years causing argyria in our review of the literature. This is probably due to the low levels of silver contained in such preparations, since only very small amounts of silver are needed for its antiseptic effect. Humans consume approximately 100 micrograms of silver every day in the diet. Additional amounts within this range would be considered

[8] Daniele S. Lantagne, "Investigation of the Potters for Peace Colloidal Silver Impregnated Ceramic Filter," 23. Submitted to Jubilee House Community, December 21, 2001.

> safe by all reasonable estimates, especially if the amount needed to develop argyria would be equivalent of 380,000 micrograms (or 3.8 grams) of silver a day.[9]

To summarize, argyria occurs with *im*properly made colloidal silver—such as when spring or tap water is used, or if salt or other impurities are added to the mixture when the silver is being made—resulting in high concentrations and large doses. All remaining cases are not due to colloidal silver at all, but due to occupational exposure and other kinds of silver preparations, composed of silver salt solutions and silver proteins. *In the unlikely event that your skin does become discolored, however, you can reverse the discoloration.* See Sidebar (at end of article), "How to Reverse Argyria."

Well made, low concentration colloidal silver has yet to cause a single case of argyria. The body excretes the metal as fast as it is absorbed assuring that critical quantities of metal will not accumulate within a lifetime.

Properly made colloidal silver does not contain flakes or turn dark. If it does, particles will be visible in the solution, and will settle over time. Do not drink this liquid; the particles are too large to be of therapeutic value. You could try using it for external bathing, poultices and cleaning. However, there is no guarantee that it would work as well as smaller-particle CS, because the therapeutic value of the silver occurs from its tiny micron size.

[9] Alexander G. Schauss, quoted at www.happyherbalist.com/fda_report.htm#Food%20and%20Drug%20Administration (September 16, 2004).

Colloidal Silver Generators for Home Use

In the United States, colloidal or electrically isolated (ionic) silver preparations between 5 and 15 ppm can be bought in the health food store, generally at the price of twenty dollars for an ounce or two. This cost is excessive, considering that a seriously ill person will need to drink ½ to 1 quart or liter, or more, of CS each day until the condition clears. Mild silver protein (MSP), colloidal silver protein (CSP), and products containing various silver salts—although not recommended for safety reasons—are also available at much higher concentrations, and at a similarly excessive cost.

These high costs are unnecessary. All you need to make your own CS is a CS generator, a water distiller, several plastic bottles for storage, and an optional ppm meter. You can buy a basic CS generator with silver wire for about fifty dollars. Rather than purchasing distilled water in soft plastic containers (whose molecules leach into the water), you can buy a good quality water distiller for a little over a hundred dollars. After your initial investment, the price of an entire liter of colloidal silver is pennies instead of hundreds of dollars. When you consider the effectiveness of CS as an anti-microbial agent, CS is one of the most cost-effective health products you can use.

There are different styles of colloidal silver generators on the market. All of them operate on the basic principle of sending electrical current through 99.9% silver electrodes to make the tiny silver particles and ions come off into the distilled water. The smaller CS generators are about the size of a cassette tape recorder. They have a simple on/off switch and usually, a light comes on when the silver has reached a certain concentration. If the user wants a higher concentration, the unit is turned off to reset the unit, and a second round of

electricity brings the concentration up. If a higher concentration is wanted, the unit is again turned off, and a third round of current is introduced. Generally, such units can make about 1 gallon at a time.

Professional size CS generators are essential for clinical applications, where large numbers of people need a gallon or more of 12 to 15 ppm colloidal silver on a daily basis. The larger "industrial strength" generators come with their own container, and are also equipped with a mechanism for stirring the batch of CS as it is brewing. For larger amounts, stirring is a good idea, since it ensures smaller silver particles.

Meters that measure the ppm can be used to monitor the concentration of CS batches. However, in a generator that has a built-in monitor, an external measuring device is unnecessary.

Whatever generator is used should be able to produce particles of at least 12 ppm. Although 5 ppm to 10 ppm (a popular concentration range) brings good results, experience suggests that the minimum concentration required for serious and chronic diseases is 12 ppm. Concentrations of more, such as 15 or 20 ppm, do not seem to be more effective than concentrations of 12 ppm.

Storing Colloidal Silver

The following guidelines are not relevant for people who drink CS as soon as it is made. However, it is useful to know how to keep colloidal silver if large batches are made that will be stored.

- Colloidal silver is thought to store best at room temperature, although extremes in temperatures have not been observed to hurt it.
- Properly made colloidal silver does not seem to deteriorate when exposed to light, so setting it in the sun will probably not hurt it.
- You will know that the stored CS has become contaminated if it turns color such as dark gray or purple (clear and light yellow are fine), or if visible silver particles start to appear in the water or settle to the bottom. If this happens, the CS should be discarded. Visible silver particles, or a darker colored solution, indicates that fewer silver colloids or ions are suspended in the liquid—and the fluid will be less effective for killing pathogens.
- Preliminary research suggests that glass is not the best material for storing CS, because the silver may "plate out"—that is, break down into larger particles—onto the glass, thus lowering the concentration of silver in the liquid. Plastic is actually a better material for storage. The safe plastics are #5 PP, #2 HDPE, and #4 LDPE.

Incidentally, if CS is boiled, the increased agitation of the particles due to heat can cause them to clump together. Likewise, if frozen, the particles are forced to crowd into the unfrozen part, until they combine. Although this does not seem to do any harm, it's possible that the silver can precipitate out of the solution, so the benefits of CS would not be as pronounced. We do not have enough information at this time to know the complete effects of heating and freezing. However, some people do cook with CS, with the benefits apparently remaining intact (see below).

Therapeutic Colloidal Silver: Method and Amounts

Internal Use

Since colloidal silver has almost no taste, it can simply be swallowed, or swished in the

mouth for a few minutes to speed absorption into the bloodstream and reduce tooth decay. It can be used as a sinus wash or a nasal spray, and also substituted for cooking water without any loss of its therapeutic properties. It can also be put into drinking water to purify it.

Some people cook with colloidal silver, using the liquid instead of the water that ordinarily would go into soup, stew, batter, etc. One naturopath colleague attributes the robust health of his children to their effortless daily intake of silver from the moment they were born. Since the CS is homemade, the cost is minimal. In answer to the whether heating the silver causes it to precipitate out of solution, Mike Devour, a veteran maker and user of CS for many years, states: "If you use your low concentration CS (EIS) in cooking, you will at most be adding back a little of the trace amounts of silver that would have probably been in there if the ingredients had come from fertile soil."[10] Any salt added to the food will convert the ionic portion of the silver to silver chloride, as does stomach acid, but without causing harm.

Incidentally, I add alkaline minerals to my CS *after* making it. Distilled water tends to be acidic, and thus makes the silver solution acidic. For many people, drinking acidic water is not beneficial. Willard Water and other alkalizing preparations appear to alkalize the fluid without destabilizing the silver. See the **Water** section at the beginning of this chapter for more information on distilled, alkaline, and Willard waters.

Inhalation Therapy

Colloidal silver has been successfully used in treating respiratory ailments when inhaled through a medical nebulizer. A nebulizer is compressor that delivers the CS in ultra-fine droplets of mist through a tube attached to a face mask or breathing apparatus. The nebulizer should produce droplets of 2 to 5 microns in size. The effectiveness of the silver is often improved with the addition of small amounts of essential oils (lemon, oregano, tea tree, lavender); methylsulphonylmethane (more commonly known as MSM); or dimethyl sulfoxide (more commonly known as DMSO).

External Use

Colloidal silver is simple to use. It can be used to clean and sterilize wounds. It can substitute for bath water, or be used as a poultice. Simply saturate a bandage or clean cloth and apply it to the skin, making sure to keep it wet. Healing will be faster, and pain and scarring will be reduced.

For virulent or life-threatening diseases such as malaria or HIV, the *concentration* or *strength* of CS should be no less than 12 ppm. Although concentrations of 12 to 25 ppm can be made, it is not really necessary to have higher strength.

Since colloidal silver is not harmful in any way, the *amount* taken is not critical. The amount a person drinks should be determined by observed effect and the level of discomfort caused by the Herx symptoms. A half-liter per day, divided into several doses throughout the day, is a reasonable amount. However, those with cancer, Lyme, or HIV/AIDS may benefit from drinking at least one gallon or more daily (again, divided up into smaller doses throughout the day).

Summary

Colloidal silver:

- Causes all bacteria and many other single-celled pathogens to die, almost

[10] Mike Devour, email communication, November 29, 2007.

instantaneously, by disabling the enzyme they need for respiration.

- Does not create microbial resistance due to the mechanism by which it operates.
- Does not affect microbes in solids, but does affect single-celled microorganisms in a fluid medium (bloodstream, water, etc.).
- Appears to have an anti-inflammatory effect when rubbed in wounds.
- May be an essential nutrient, as it appears to encourage proper immune response and the regeneration of healthy cells and tissues.
- Is painless when being applied or drunk.
- Can be drunk, added to food and drink, inhaled through the nose, put into a nebulizer (a machine that turns a fluid into a fine mist and sprays it into the nose), bathed in, and applied to the skin.
- Is easy to make, and requires simple equipment to produce it.
- Is completely safe and never poisonous in any amount, as long as it is properly made.
- That is not properly made is comprised of concentrated silver compounds, has only one side effect, which can occur only if the fluid is taken in large quantities over a very long period: a blue-gray discoloration of the skin, *which can be reversed*.
- Tastes almost like pure water, so is very easy to take, even for small children and picky eaters.
- Is effective for serious illness such as HIV, AIDS, cancer, and malaria at concentrations of 12 ppm.
- Does not need to be more than 12 ppm, but may go up to 25 ppm.
- Appears to increase immune function in mammals, independent of its microbe-disabling properties.

With the media's constant publicizing of bird flu and other assorted vague, terrifying infections, it seems unwise not to have your own colloidal silver making apparatus.

Traditional and Unique Uses for Silver Colloid

Because silver inhibits the growth of bacteria, viruses and fungi,
It will keep items fresh and sanitized, and prevent spoilage and germ growth.

Food and Drink:

- Add to water when traveling or camping.
- Add to foods when canning, preserving or bottling.
- Rinse fruit and vegetables before storing or using.
- Spray on top of opened jam, jelly, and condiment containers and inside lids before replacing.
- Put in cooking water.

Household, including Kitchen:

- Spray on cutting boards, kitchen sponges, and pans that the dogs licked.
- Spray refrigerator, freezer and food storage bin interiors.
- Add to swamp cooler water.
- Add to water based paints, wallpaper paste, dishwater, cleaning and mopping solutions.
- Treat shower stall, toilet seat, bathtub, tile floors, sinks, urinals, and shower mats.
- Put into Jacuzzis and hot tubs.
- Spray air conditioner filters after cleaning, and air ducts and vents.
- Add to laundry final rinse water.
- Treat pools, fountains, humidifiers, dishwashers, and re-circulating cooling tower water.
- Wipe telephones, pipe stems, headphones, hearing aids, eyeglass frames, hairbrushes, combs, doorknobs.

Personal Care:

- Spray on abrasions, acne, burns, cuts, rashes, sunburn and wounds.
- Sterilize toothbrushes, surgical instruments and shaver.
- Use as mouthwash, add to shampoo, and use as scalp rinse.
- Spray in shoes, between toes, and between legs.
- Soak dentures, and douche and enema attachments.
- Add to bath water, gargle, douches, colon irrigation, and nasal spray and dental hygiene instrument solutions.
- After bathing, spray on body.
- Spray or wash pillowcases, sheets, towels and bedclothes of people who are ill.

Pets and Plants:

- Mix in pet water, or give to pets instead of water.
- Put in birdbath.
- Spray pet bedding and let dry.
- Add to animal shampoo.
- Spray plant foliage.
- Put in vases of cut flowers.

Adapted from Robert C. Beck, "A Few Unique, Plus Traditional uses for Silver Colloid," 1998

How to Reverse Argyria

Periodically, negative publicity emerges on the presumed dangers of colloidal silver—specifically, its ability to turn skin gray, a condition known as *argyria*. While argyria can and does occur, it is actually quite rare. The purveyors of the emotionally-laden, negative press focus on the shock value of argyria. They do not mention that except for the cosmetic aspect, argyria is harmless. They do not mention why some individuals can develop argyria. Nor do they mention that argyria can be reversed.

Excess silver is normally excreted from the system. By the time a silver color is visible in the skin, the buildup of silver in the body is quite extensive and has occurred over time. *The development of argyria depends on the type of silver that's ingested*. Colloidal silver, which is not bound to other elements, is easily excreted from the system. But silver that's bound to other elements (such as mild silver protein or silver salts) is much more difficult to excrete. Also, people with a slower metabolism are more susceptible to argyria because they do not excrete the silver as quickly as their faster-metabolism counterparts. If thyroid-lowering foods (such as soy, or raw goitrogenous vegetables), or any drugs (such as the antibiotic doxycycline) are taken, one's metabolism will be lowered—thus making one more susceptible to accumulating silver in the body.

One very important piece of information on how to reverse argyria comes from the US Environmental Protection Agency. People with low levels of selenium and Vitamin E may have an increased risk of argyria because both nutrients act as *chelators*. That is, they bind to both heavy metals and also silver (which is a noble metal), thus escorting the unwanted elements out of the system.

Silver can be removed from the tissues. The following slow, but effective, protocol is adapted from Dr. Schauss, medical doctor Hans Gruenn, and Mark Metcalf, who for many years has helped thousands of people become more educated and empowered by writing about the benefits of colloidal silver.

To reverse the effects of argyria, take the following every morning with one quart (one liter) of water.

- 200 mcg of yeast-free selenium (safe to take on an ongoing basis).
- Vitamin E, 100% mixed natural tocopherols (d-alpha, beta, delta and gamma tocopherols). People over 50 years old who may be at risk of stroke should take 1000 IU. Those under 50 years old who are not at risk of stroke may take 2,000 IU per day. Since high doses of vitamin E thins the blood, check with your doctor. This supplement may be contraindicated for people on medication to thicken the blood, hemophiliacs, and other high-risk individuals.
- 2 teaspoons organic MSM (sulfur, or MSM, also binds with silver and helps pull it from the body).
- 4,000 mg (4 grams) of vitamin C per day, in 1000-mg (1-gram) doses each.
- 1 high-potency Vitamin B tablet, 100 mg.
- 1 teaspoon kelp powder. (You might also be able to substitute ¼ to 1 teaspoon of liquid colloidal iodine.)
- Liquid or ionic minerals, including trace minerals, 2 ounces or more a day. Minerals containing fulvic acid work better than a formula without fulvic acid.

In addition to the water you take with the above supplements, drink another ¾ gallon (6 quarts or 6 liters) of water a day.

adapted from www.silvermedicine.org/forum/viewtopic.php?t=13 and www.silverprotects.com/argyria.html

