

Colloidal Silver

The Natural Antibiotic

Safe, Powerful, and Affordable
Medicine to Boost Immunity and
Reduce Pain and Inflammation

Werner Kühni and Walter von Holst

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Translated by Aida Sefic Williams
with assistance from John R. Baker



Healing Arts Press
Rochester, Vermont • Toronto, Canada

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“This is the most authoritative and insightful guide to the curative and healing powers of colloidal silver. The authors offer a practical and systematic protocol for addressing common acute and systemic complaints. A must for every household and health care practitioner.”

VATSALA SPERLING, MS, PHD, PDHOM, CCH, RSHOM (NA)

“This book is a complete, thorough, but very readable presentation of the wonderful antibiotic and anti-inflammatory properties of Colloidal Silver!”

CHRISTOPHER VASEY, AUTHOR OF NATURAL REMEDIES FOR
INFLAMMATION AND OPTIMAL DETOX

Acknowledgments

The ideas presented in this book were born out of discussions we had with each other and with our German publisher, AT Verlag. Once we came up with the idea to write a comprehensive “silver book” that would also include information about the use of colloidal silver, we developed the theme together. As we had found when working on our Enzyklopädie der steinheilkunde (Encyclopedia of Stone Healing), the principle of analogy also proved to be the most promising and realistic approach that could be applied to all aspects of silver.

I wish to thank my teachers and professors at the University of Heidelberg for their knowledge and inspiration: Professor Schipperges (the history of medicine), Professor Weiß (the history of chemistry), professors Düchting and Bersching (the Latin language of the Middle Ages), Professor Müller-Jahnke (the history of pharmacology), and doctors Gebhard and Wünstel (homeopathy).

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WERNER KÜHNI

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Introduction

During the last quarter of the nineteenth century and the first half of the twentieth, medical practitioners held silver—especially colloidal silver—in high regard. This changed during the twentieth century with the introduction of antibiotics and corticosteroids. Today, our increasing awareness of the side effects of these kinds of pharmaceutical drugs indicates that it is time for silver to regain its place in medical theory and practice. The uses for silver—in particular colloidal silver—have expanded enormously in recent years, and these are now so well known that it is only a matter of time before colloidal silver once again becomes a standard component in the medical pharmacopoeia.

There are literally hundreds of thousands of pages about colloidal silver on the Internet. Unfortunately, much of this information is unreliable and unorganized, and a great deal of it is simply wrong. For this reason we believe that the time has come for a book that accurately and clearly examines both the theoretical basis for and the range of practical uses of colloidal silver. In keeping with this goal, we consider it equally important that we also point out the limitations of our own current understanding of and experience with colloidal silver, not only for the sake of our readers, but also to hopefully provide an impetus for further research.

While silver is frequently characterized as a natural antibiotic, this description encompasses only a small part of its broad range of uses. For example, its antibiotic effect does not explain why silver is so effective in treating viruses, which are, strictly speaking, not

“alive.”*1 Nor does it address its capacity for healing wounds and alleviating pain. It makes no note of the antidepressive effects that have often been observed after using silver solutions and ignores the fact that colloidal silver can be used to continue treatment after a person has been weaned off of psychopharmacological agents. Characterizing silver as an antibiotic also says nothing about its ability to help epileptics have fewer as well as less severe seizures.

Recent years have shown that colloidal silver can form the basis of a practical and systematic form of therapy for a host of conditions and diseases as well as an effective means of maintaining one’s health and well-being—a subject that will be explored in detail in this book. We will also look at the use of silver in mineral stone therapy; in this regard, silver differs from all other metals in its luster and indestructibility, while its purifying influence can cause many pathogens and ailments to disappear.

Of all the colloidal metals, silver has the greatest range of medical applications. Although the effects of colloidal silver are similar to those of colloidal gold and colloidal platinum, in practice it is actually far superior to these other noble metals. And even though colloidal gold can be used for a variety of psychological ailments, colloidal silver exerts similar effects when taken over a longer period of time.

Despite its long and complex cultural history, silver has been seen in an ambivalent light. Since ancient times, scientists and poets around the world have been fascinated by the great beauty and the marvelous properties of this precious metal. In the mythological, spiritual, and psychological domains, and even in fairy tales, silver has come to symbolize modesty, purity, devotion, neutrality, and reason. In meditation, it can open a path to deeper spirituality. At the same time, silver’s negative potential can be seen in the ways that it

has seduced the powerful and the wealthy, such that it has come to stand for corruption and colonialism.

And so the task that lies before us is to compile all that has been learned about silver in both theory and practice from the many different sources—the humoral pathology of ancient times, alchemy, folk medicine, homeopathy, anthroposophy, and modern biomedicine—and to present this to you, the reader.

1

A Brief History of Silver

Metallic silver has been known since antiquity. The oldest known silver artifacts date from the fourth century BCE. The Egyptians were probably the first to use silver for medicinal purposes. We know silver also found its way into ancient Greek, Roman, Persian, Indian, and Chinese medicine. Hippocrates believed that silver healed wounds and controlled disease. He listed as a singular treatment for ulcers “the flowers of silver alone, in the finest powder” (Rentz 2015). Herodotus describes how the king of Persia carried with him boiled water in silver flagons to prevent sickness. In the Americas, the Inca, Maya, and Aztec peoples used silver both for creating cult objects and for ornamentation, and there is evidence that ancient Incan and Muisca surgeons performed cranioplasty using precious metals and gourds. Indeed, the quest for gold as well as for silver was part of the reason Spain colonized these indigenous cultures of the Americas.

SILVER DURING THE MIDDLE AGES

The different ways that silver was used during the Middle Ages were largely shaped by influences stemming from antiquity and Arabic alchemy. It was not until the sixteenth century, with the introduction of Paracelsus' (1493–1541) concept of spagyrics, that this changed. Swiss-German physician, botanist, alchemist, astrologer, and occultist Paracelsus (né Philippus Theophrastus Bombast) first coined the term spagyric to refer to an herbal medicine produced by alchemical procedures that involve fermentation, distillation, and the extraction of mineral components from the ash of a plant. Paracelsus associated the seven metals (gold, silver, mercury, copper, iron, tin, lead) with the seven planets (sun, moon, Mercury, Venus, Mars, Jupiter, Saturn), and in turn with seven different parts of the body, and even with certain foods.

If you have the Astrum of Mercury, in the same manner, you will tinge the whole body of common Mercury. If you have the Astrum of Venus you will, in like manner, tinge the whole body of Venus, and change it into the best metal. These facts have all been proved. The same must also be understood as to the Astra of the other planets, as Saturn, Jupiter, Mars, Luna, and the rest. For tinctures are also prepared from these: concerning which we now make no mention in this place, because we have already dwelt at sufficient length upon them in the book on the Nature of Things and in the Archidoxies. So, too, the first entity of metals and terrestrial minerals have been made, sufficiently clear for Alchemists to enable them to get the Alchemists' Tincture. (Paracelsus)

Because he associated silver with the moon, and mercury (i.e., quicksilver) with Mercury (the planet), Paracelsus pioneered the idea of using silver amalgam for medicinal purposes, such as in detoxifying baths.

Several hundred years earlier, writer, composer, philosopher, Christian mystic, visionary, and polymath Hildegard von Bingen (1098–1179) viewed silver through the lens of the ancient doctrine of humoral pathology. She considered it a potent remedy for treating congestion and the coughing that results from it. She characterized silver as sharp and cold. In the ninth book of her *Physica*, titled “Metals,” she notes:

Silver (argentum) is cold, [because it contains cold wind, which makes even the earth cold]. A person who has in him a superfluity of humors, which he often expels [by coughing them up], should heat very pure silver in the fire and, thus heated, put it in good wine. He should do this three or four times, so that the wine gets hot from it. He should drink it often, heated this way, before breakfast and at night. It will diminish his superfluous humors.

[The strong natural cold of silver diminishes hot, cold, and moist humors by its sharpness, joined with the heat of the fire and the heat of the wine, altered as described.] (Bingen 1998, 238)

In the fourteenth century, Conrad von Megenberg, a polymath and canon of Regensburg, wrote in part 7 of his *Book of Nature*,

Silver also has the ability to fuse other metals together and make one piece from two. When ground and mixed with precious ointments, it can be used against that viscous moisture in the body known as phlegm. . . . Silver is pure, but less so than gold. . . . Although it is white, it has the property of blackening other things that scratch it. Its slag, called scoria in Latin, can be used to treat scabies and hemorrhoidal bleeding. (Megenberg 1897, 478)

It should be added that Megenberg's reports on the effectiveness of silver in treating metabolic weaknesses, itching, and hemorrhoidal complaints are in complete agreement with Hildegard von Bingen's earlier accounts.

Until the time of Samuel Hahnemann (1755–1843), the founder of homeopathy, preparations of silver had found only limited medical use. Hahnemann himself was slow to acknowledge silver's many benefits. In his 1798 *Apothekerlexikon* (Pharmacist's Lexicon), one of the standard reference works of homeopathy, Hahnemann still reflected an earlier era's views about silver's limited application in medicine: "A pharmacist will occasionally wrap silver leaf (*Argentum foliatum*) around their pills as a kind of luxury, a procedure that makes this form of medicine, which is already difficult for our stomachs to digest, only that much more indissoluble and ineffective" (2:216 ff.). In his subsequent works Hahnemann began to demonstrate a growing interest in silver's efficacy, describing two forms of silver nitrate, as metallic silver had not been used in medical practice before his time. By 1820, however, Hahnemann expanded the role of silver in homeopathy by introducing triturated colloidal silver, which he called ARGENTUM METALLICUM metallicum, describing this as a "sensible medicament" for treating patients.

Silver in Folk Medicine

In European folk medicine, ancient ideas about silver commingled with various demonological notions that arose during the medieval period. A mixture of these beliefs continued to shape the ways in which silver was used all the way up until the early twentieth century, especially in the Alps, the Balkans, and the Mediterranean regions, as illustrated by this passage from Ulrike Müller-Kaspar's 1999 book, *Handbuch des Aberglaubens* (Handbook of Superstitions): "Silver has the power to ward off demons and illnesses, whereby silver that has been inherited over many generations is particularly powerful. Wearing rings of silver is an especially useful apotropaic means of fighting off various illnesses. Finely ground silver, mixed with various plants, is said to be useful in treating rabies, nosebleeds, dropsy, etc." (Müller-Kaspar 1998). Thus in some ways silver is still used today just as Dioscorides and Meigenberg recommended. The manner in which Paracelsus and the other early modern alchemists used silver apparently had little impact on European folk medicine because the theoretical justifications they supplied for its use were too abstract.

MODERN SCIENCE CONSIDERS SILVER

In 1861, Scottish chemist Thomas Graham (1805–1869) described the differences between colloids that were capable of passing through membranes and precipitates that were unable to do so. Graham's discovery was that substances could enter a solution in such a manner that they exhibit characteristics that are quite different from those of a true solution. He applied the term colloidal (from kola, "glue") to this intermediate state, as glue, gelatin, and related substances were the most obvious to him as being in this unique state. Graham's study of colloids was foundational in the field known as colloid chemistry, and he is credited as its founder.

In 1869, French scientist J. Ravelin noted that even low doses of silver produced antimicrobial effects. In 1881, Carl Siegmund Franz Credé (1819–1892), a gynecologist from Leipzig, recommended administering eye drops containing 1 percent silver nitrate to newborns to prevent them from developing ophthalmia, a form of conjunctivitis common in neonates, which can cause blindness. Both because of its success and because better alternatives were lacking, the use of what became known as Credé's prophylaxis was made mandatory in several countries and became a standard practice in obstetrics. By 1897, silver nitrate began to be used in the United States to prevent blindness in newborns, a practice that was eventually replaced by the use of modern antibiotics.

In 1893, Swiss botanist Karl Wilhelm von Nägeli (1817–1891) characterized the properties of silver as oligodynamic, which simply means "active in very small quantities." Nägeli determined that concentrations of as little as 0.0000001 percent silver ions were

sufficient to kill a freshwater pathogen (*Spirogyra*) and other living organisms such as algae, molds, spores, fungi, prokaryotic and eukaryotic microorganisms, and even viruses.*2 In 1910, Dr. Henry Crookes reported that certain colloidal metals

have a highly germicidal action but are quite harmless to human beings. . . . The greater the extent to which the metal is set free in a very dilute solution of its salts, the greater is the germicidal power of the solution! By converting the metal into a colloidal state it may be applied in a much more concentrated form and with correspondingly better results. (Searle 1920, 68)

In 1919, the prolific author, editor, and translator Alfred B. Searle wrote in *The Use of Colloids in Health and Disease*, “The germicidal action of certain metals in the colloidal state having been demonstrated, it only remained to apply them to the human subject, and this has been done in a large number of cases with astonishingly successful results” (Searle 1920, 75).

In all, more than ninety-six different silver medicinals, many used intravenously, were in use prior to 1939, as documented by the Council on Pharmacy and Chemistry of the American Medical Association (Rentz 2015).

In the 1970s, Dr. Robert O. Becker (1923–2008), an orthopedic surgeon and medical research doctor, studied the effects of colloidal silver on electrochemical processes in the body. He wrote about his research on the medical applications of silver in several best-selling books, including *The Body Electric*, and also published numerous articles about the efficacy of silver in various scientific journals.

Silver . . . killed or deactivated every type of bacteria without side effects, even with very low currents. We also tried the silver wires on bacteria grown in cultures of mouse connective tissue and bone marrow, and the ions wiped out the bacteria without affecting the living mouse cells. We were certain it was the silver ions that did the job, rather than the current, when we found that the silver-impregnated culture medium killed new bacteria placed in it even after the current was switched off. The only other metal that had any effect was gold; it worked against Staphylococcus, but not nearly as well as silver. (Becker and Selden 1985, 167)

Dr. Becker could arguably be said to have pioneered the current resurgence of scientific interest in the use of silver in medical applications. His primary area of personal interest had always been exploring the possibility of complete tissue and organ regeneration in humans. Through his fascinating journey, which spanned over three decades of dedicated research, he brilliantly explored bioelectric and electromagnetic systems, reaching to understand and control the growth and healing process in complex organisms. Before Becker's research group dissolved, Dr. Becker found that silver ions, electrically injected, could suspend the mitosis of (cancerous) malignant fibrosarcoma cells. Dr. Becker hypothesized that cancer cells, regardless of the initial cause, were cells caught in a partially differentiated and primitive state. Unfortunately, this promising research was never fully explored.

However, other researchers picked up on the trail of research initiated by Dr. Becker, and in chapter 3 we will look at some of the numerous studies that have been done in recent years on the viability of silver in a host of medical applications. But first, let's take a look at how silver, one of the earth's most valuable precious metals, is formed and extracted.

2

The Geology, Physics, and Extraction of Silver

The primary means by which silver is produced in nature is through hydrothermal processes occurring in sulfide deposits, since silver is formed by forming compounds with sulfur. For this reason, the most common primary sources of silver are formations that also contain lead, as well as those containing copper, gold, and zinc. It is also found in its free form, as silver.

Secondary sources of silver include the oxidation zone of the gossan, intensely oxidized, weathered, or decomposed rock, usually the upper and exposed part of an ore deposit, often called iron cap (from the German eiserer hut, referring to the area close to the surface), and the zone of cementation that lies below the gossan. Here, sulfide deposits that contain silver can be precipitated as the rocks that lie above decompose through weathering. Such silver deposits are often found together with argentite, pyrargyrite, and stephanite. Secondary sediments are usually fine in structure, although they may also be found as a cement or in sheets of copper-bearing sandstones or sapropelic copper ores. Most alluvial deposits of heavy metals contain only insignificant amounts of silver.

The abundance of silver in the earth's crust has been calculated to be 1×10^{-4} percent by weight = 0.1 gram per ton, making silver some ten times more abundant than gold. Additionally, saltwater contains

0.3 to 10 milligrams of silver per cubic meter, or approximately 1/100th parts per million (ppm).

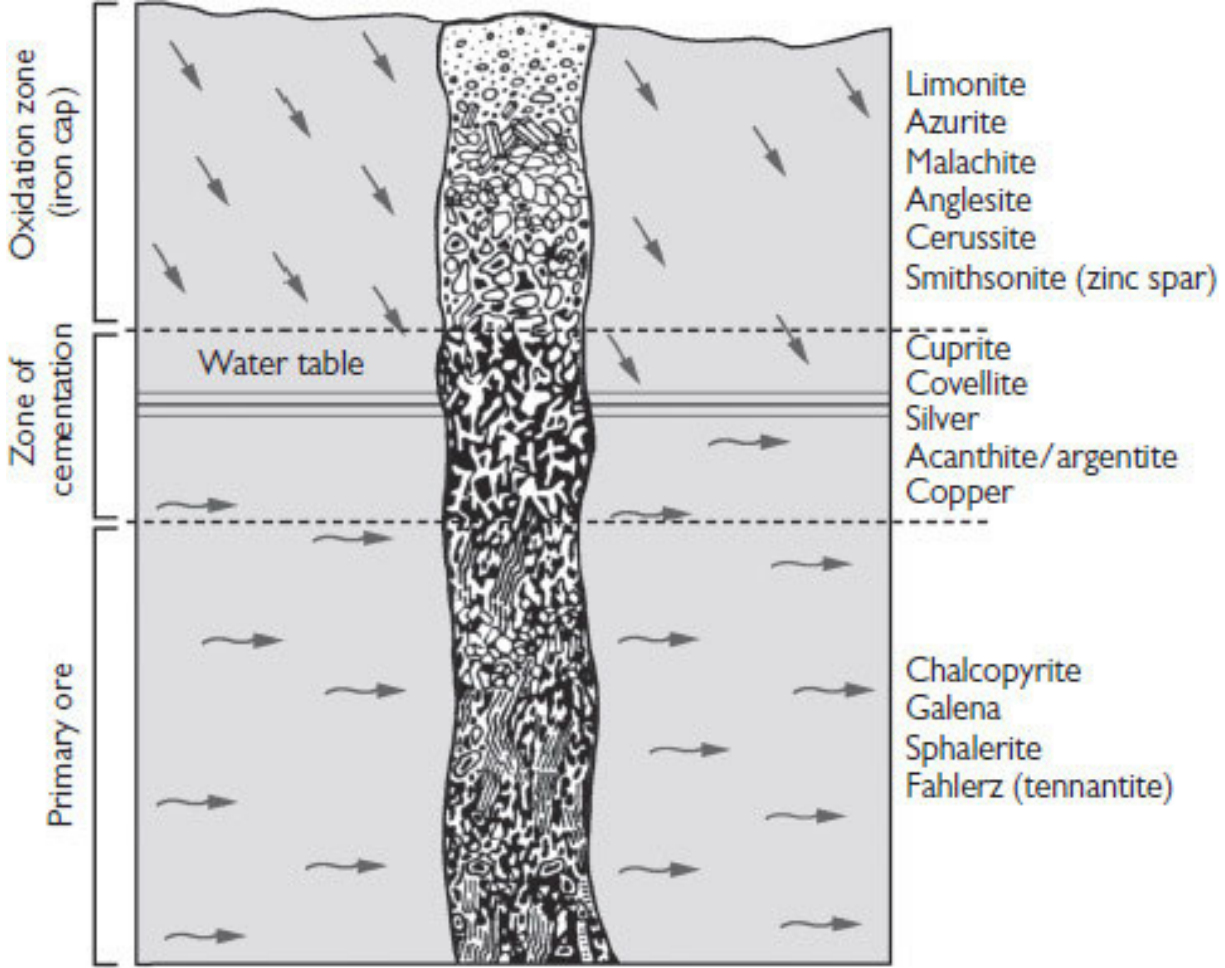


Fig. 2.1. Zone of cementation

SILVER ORES WITH A CONTENT OF MORE THAN 45 PERCENT SILVER

The International Mineralogical Association currently recognizes 128 minerals as being silver materials, in which silver is incorporated directly into their crystal lattices. The most important of these have a silver content greater than 45 percent. They include:

Acanthite: Ag_2S , silver sulfide; black, metallic luster; hardness (Mohs scale) 2–2.5; specific gravity 7.22; molecular weight 247.8 = 87.06 percent silver.

Argentite: Ag_2S , cubic silver sulfide; silver gray, metallic luster; hardness 2–2.5; specific gravity 7.2–7.34; molecular weight 247.8 = 87.06 percent silver

Dyscrasite: Ag_3Sb , silver antimonide; silver white, metallic luster; hardness 3.5–4; specific gravity 9.4–10; molecular weight 445.36 = 72.66 percent silver

Empressite: AgTe , silver telluride; pale bronze, metallic luster; hardness 3.5; specific gravity 7.6; molecular weight 235.47 = 45.82 percent silver

Eugenite: $\text{Ag}_{11}\text{Hg}_2$, silver-mercury; white; hardness 2.5; specific gravity 10.75; molecular weight 158.75 = 74.73 percent silver

Hessite: Ag_2Te , disilver telluride; lead gray, metallic luster; hardness 2–3; specific gravity 8.24–8.45; molecular weight 343.34 = 62.83 percent silver

Luanheite: Ag_3Hg , silver-mercury; gray; hardness 2.5, specific gravity 12.5; molecular weight 524.20 = 61.73 percent silver

Naumannite: Ag_2Se , silver selenide; grayish black; hardness 2.5; specific gravit: 7.69–7.79; molecular weight 294.7 = 73.2 percent silver

PHYSICAL AND CHEMICAL PROPERTIES OF SILVER

Silver is a lustrous white noble metal capable of being highly polished. It is a member of Group 11 (the copper group, which also includes copper and gold) and Period 5 of the periodic table of elements.

Latin name for silver: Argentum Chemical symbol: Ag

Abundance in the earth's crust: 0.000001 percent Naturally occurring isotopes (frequency shown in parentheses): 107 (51.84 percent) and 109 (48.16 percent); valence +1, +2, and +3

Atomic number: 47

Relative atomic mass: 107.87

Atomic radius: 144 pm

Ionic radius: 89 (=2e) 126 (=1e) Compounds: mostly 1 valence (also 2 valence) Density: 10.49 g/ccm

Melting point: 961.9 degrees C

Boiling point: 2163 (2212) degrees Mohs hardness: 2.7 (annealed)
Coefficient of thermal expansion: 19.7

Electrical conductivity: 6.3×10^7 S/m Absolute entropy: at 25 degrees, 42.73 J K⁻¹ times mol⁻¹

Solubility in water: approximately 1:100,000

With a reflectivity of 96 percent, the surface of polished silver is the best reflector of light known. Silver is very malleable and is harder than gold. Alloying silver with copper increases its hardness without losing the silver luster.

Silver is very resistant to air and acids. Silver is the most reactive of the precious metals; when exposed to sulfur compounds and oxygen it will form an easily removable brownish black sulfide coating at room temperature. Due to its “noble” characteristics, silver can only be dissolved in oxidizing acids (for example, nitric acid, hot concentrated sulfuric acid).

Electron configuration

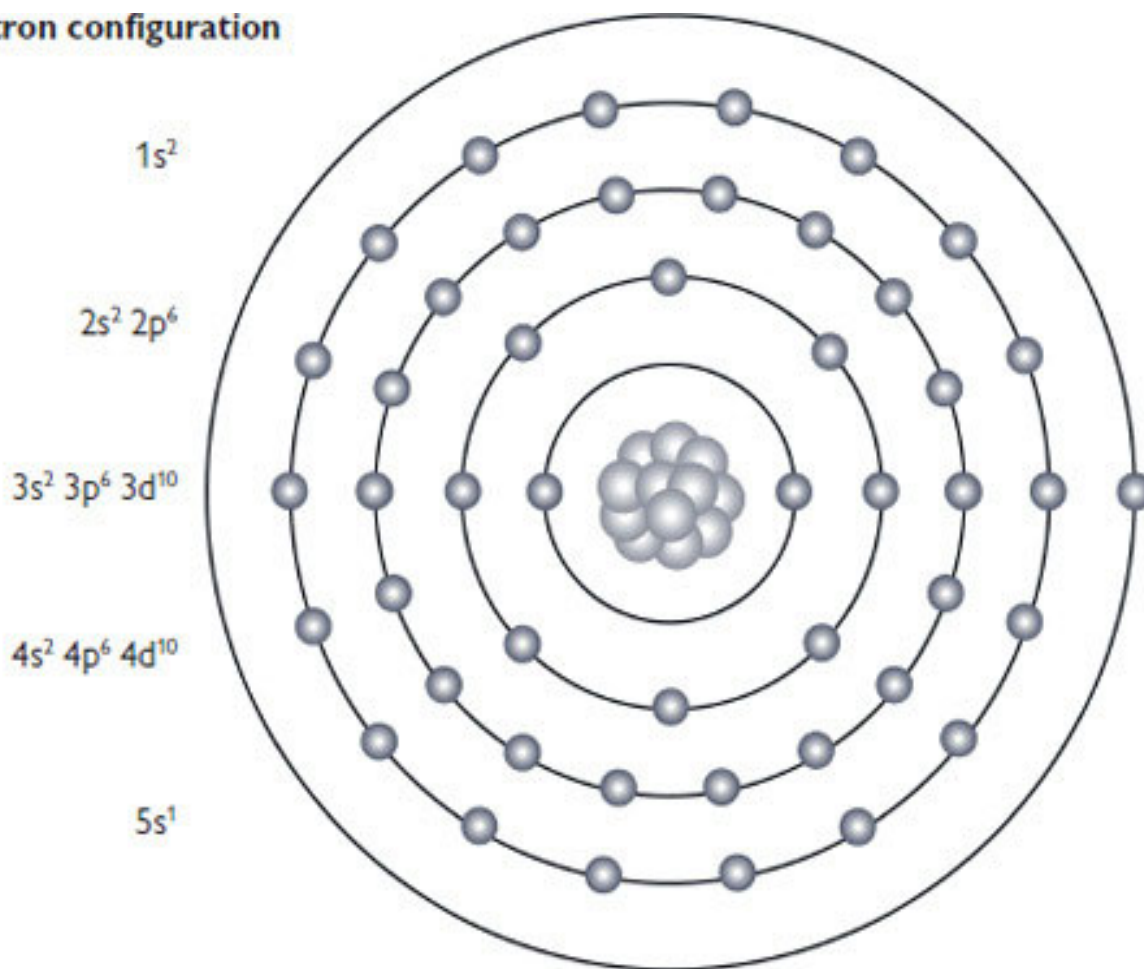


Fig. 2.2. The atomic model of silver, showing its electron cloud

A BRIEF HISTORY OF SILVER MINING

The mining of silver ore goes back to antiquity. The Book of Genesis mentions silver, and the presence of slag heaps found in Asia Minor—specifically, Anatolia (modern Turkey)—and on the islands of the Aegean Sea indicate that silver was being separated from lead as early as 4000 BC. The rich silver mines in Laurion, in the southeastern part of ancient Greece, helped provide a currency for the Athenian economy. The process for extracting silver from lead ore involved the use of slave labor to mine the ore in underground galleries, which was then washed and smelted. Elaborate washing tables that still exist at the site used rainwater held in cisterns, which collected during the winter months.

The extraction of silver was widespread in Roman Britain after the conquest of the island in the first century AD. Silver, along with copper, gold, iron, lead, salt, and tin, were materials in high demand in the Roman Empire, which was one of the reasons for the Romans' conquest of Britain. From the mid-fifteenth century on, silver began to be extracted from copper ores in massive quantities in Central Europe by means of a liquation process.

The empire of the Habsburg Holy Roman Emperor Charles V (1500–1558) eventually encompassed all of South and Central America apart from Brazil. As his empire grew, Charles gained ever-greater control over the mineral resources in the Americas, along with the spice and slave trades. Following Spain's colonization of Mexico in the 1520s, the amount of silver in circulation in Europe grew to an extent that had never before been seen, making the Spanish royal house incredibly wealthy. The wars to preserve the Spanish control

of Italy and the Netherlands, as well as the wars against England, were financed with silver. Ironically, the vast amounts of money that came into circulation during eighty years around this time ultimately led to an inflationary spiral and the bankrupting of the state, causing the collapse of the Spanish infrastructure.

Silver mining became a driving force in the settlement of the North American West between 1876 and 1920, with major booms for silver and associated minerals (lead, mostly) in the Comstock Lode area of Nevada, the Leadville district in Colorado, and various places in Utah. Improvements in mining technology opened up the mining of silver in Canada, Africa, Mexico, Chile, and Japan and contributed to expanding world production, beginning in the early twentieth century. Today silver, like gold, is obtained in ever-greater quantities by reprocessing electronic waste, resulting in large increases in the price of silver that have occurred in recent years.

The lists below demonstrate the impressively long tradition of silver mining in Europe, and the relatively small yields found at many sites. It also illustrates why the mineral resources of the Americas attracted such great interest in Europe and contributed to the expansion of European empires in the Americas beginning in the 1500s.

European Silver Mining

The tonnage listed is the total amount produced at a site during the time period noted.

Federal Republic of Germany/Mansfeld (Saxony-Anhalt), 1199–1990: 12,000 tons

Federal Republic of Germany/Freiberg (Saxony), 1168–1969: 5,500 tons

Federal Republic of Germany/Upper Harz (Lower Saxony), 16th century to 1992: 4,700 tons

Federal Republic of Germany/Rammelsberg (Lower Saxony), 968–1988: 1,900 tons

Federal Republic of Germany/Annaberg-Buchholz (Saxony), 1469–1850: 360 tons

Federal Republic of Germany/St. Andreasberg (Harz), 1521–1910: 320 tons

Federal Republic of Germany/Schneeberg (Saxony), 1470–1937: 300 tons

Federal Republic of Germany/Marl (North Rhine-Westphalia), 1906–1962: 250 tons

Federal Republic of Germany/Marienberg (Saxony), 1520–1900: 210 tons

Federal Republic of Germany/Johannegeorgenstadt (Saxony), 1662–1937: 110 tons

Federal Republic of Germany/Werlau (Rhineland-Palatinate), 16th century to 1961: 50 tons

Federal Republic of Germany/Maubach (North Rhein-Westphalia), 1956–1969: 50 tons

Federal Republic of Germany/Neubulach (Baden-Württemberg), 12th to 14th centuries: 36 tons

Federal Republic of Germany/Schauinsland (Baden-Württemberg), 1900–1954: 12 tons

Austria/Schwaz-Brixlegg (Tirol), 1420–1957: 3,000 tons

Italy/Rerubichi (Tirol), 1539–1843: 100 tons

Czechyňa/Banka Stavnica, 1156–1994: 4,000 tons

Czechyria/Pribram (Bohemia), 1525–1980: 3,800 tons

Czechyria/Kutna Hora, 1290–1800: 2,500 tons

Czechyria/Jachymov, 1515–1846: 700 tons

France/Largentiere, 1964–1980: 480 tons

France/St. Marie aux Mines, 10th century to 1940: 300 tons

Ireland/Tynagh, 1965–1974: 280 tons

Spain/Cartagena, 1978–1981: 100 tons

Greece/Lavrion, classical period: 3,500 tons

Norway/Kongsberg, 1623–1957: 1,350 tons

Sweden/Sala, 1510–1908: 400 tons

Russia/Zmeinogorsk (Altai), 1745–1860: 890 tons

Silver Mining in the Americas

Cobalt, Ontario, Canada, 1903–1973: 18,000 tons

Sullivan Mine, Canada, 1900–1953: 5,300 tons

Beaverdell, Canada, 1896–1991: 1,200 tons

Coeur D'Alene, Idaho, 1884–1992: 33,900 tons

Butte, Montana, 1880–1983: 22,000 tons

Park City, Utah, since 1875: 7,800 tons

Leadville, Colorado, 1859–1963: 7,300 tons

Tonopah, Nevada, 1900–1965: 5,400 tons

Black Hills, South Dakota, 1876–1985: 430 tons

Pachuca-Real del Monte, Mexico, since 1522: 45,000 tons

Guanajuato, Mexico, 1558–1990: 34,900 tons

Zacatecas, Mexico, 1548–1987: 23,300 tons

San Dimas, Mexico, since the 18th century: 15,000 tons

Batopilas, Chihuahua, Mexico, 1632–1920: 9,300 tons

Cerro Rico de Potosi, Bolivia, 1545–1810: 33,000 tons

Oruro, Bolivia, since 1595: 8,400 tons

Arcata District, Peru, 1964–1989: 1,900 tons

Hualgayoc, Peru, since 1771: 1,500 tons

Chanarcillo, Chile, 1692–1902: 2,300 tons

La Coipa, Chile, 1992–1994: 1,200 tons

THE PROCESS OF MINING SILVER

Today, at current prices, the presence of as little as fifteen to thirty grams of silver per ton of ore can make the processing of ore economically feasible. For the most part, silver ore is obtained either from open-pit mines (for example, Kidd Creek Mine, near Timmins, Ontario, Canada), or from underground mines (such as the Sunshine Mine, in Idaho).

In ores with a very high content of metallic silver, the metal can be extracted through a process of amalgamation. After the ore has been finely milled to the size of sand, it is either mixed with a solution of heavy-metal chlorides, or subjected to a process of chloridizing roasting. Each of these procedures converts the silver compounds in the ore into silver chloride. The silver and silver chlorides are amalgamated by thoroughly mixing the treated ore with mercury. The excess mercury is then filtered off the silver amalgam. Next, the silver is distilled from the amalgam, releasing the mercury with which it was mixed. The silver remains behind in the retort as a foam, which is then refined once more in a furnace to remove any remaining mercury. Cyanide leaching is used to extract the silver from ores that have lower silver content. Zinc dust is used to precipitate silver from the dissolved cyanide complex. Approximately 5 percent of the silver mined worldwide is obtained through this process, which is often environmentally harmful.

Silver is one of the initial products yielded in the processing of heavy metals that contain silver, especially lead. Galena, the most common ore of lead, may contain 1 percent or more silver in the form of silver sulfide, and this is relatively easily extracted from the galena. The

lead ore is first enriched and the concentrated ores are then processed primarily through roasting. This yields crude lead, from which the low concentrations of silver can then be extracted. Two methods have been developed for this purpose. The Pattinson process, introduced in 1833, is now in little use. The most widely used method of zinc de-silvering today is the Parkes method, patented in 1850, in which liquid zinc is used to extract silver from silver-bearing lead. The resulting silver-lead-zinc alloy does not mix with the liquid lead and floats to the top during the cooling process.

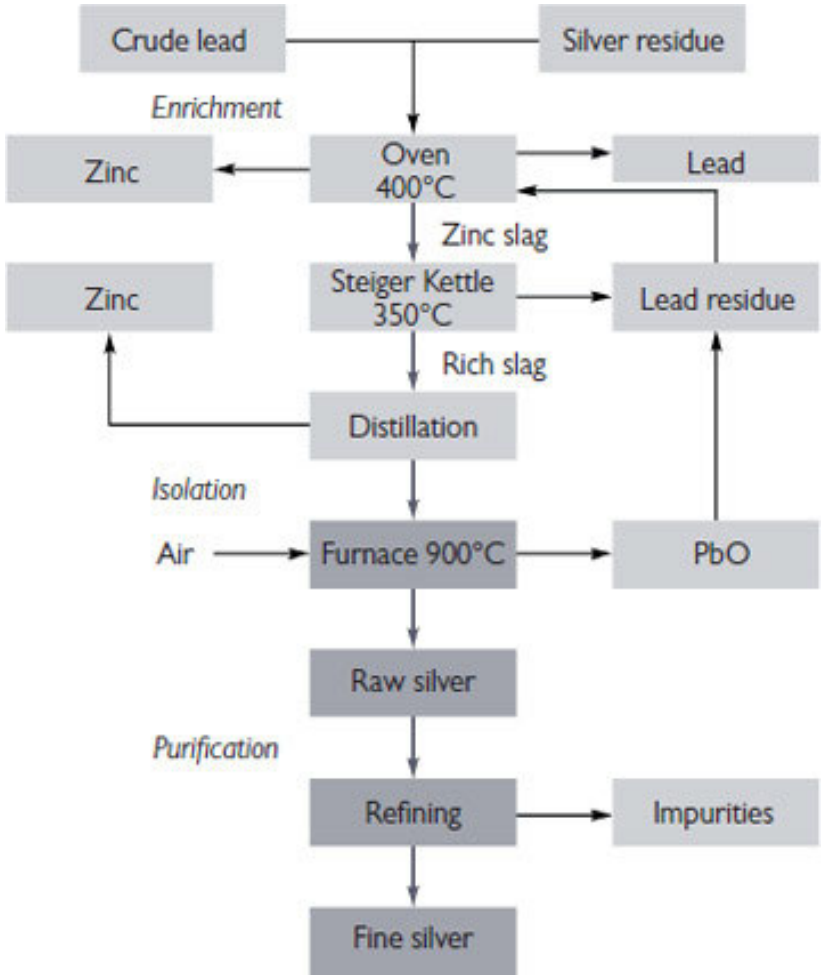


Fig. 2.3. The Parkes process for extracting silver from low-grade raw materials

In addition to silver, other metals—namely, copper, cobalt, nickel, and gold—will also bind to the zinc, and these must then be separated through either refining or electrolysis. Various proportions of zinc can be found mixed within the impure crude lead. The amount of zinc present will vary depending on the amounts of silver and gold that are also present. Some six to seven grams of silver may still be present in each ton of de-silvered lead, while the zinc slag is largely composed of a mixture of zinc, lead, and silver crystal mixtures containing 6 to 12 percent silver.

Once the zinc slag has been skimmed off and the zinc removed, what remains is lead with a high silver content. The remaining lead and any other base metals are separated through cupellation, a process in which the material is heated to a high temperature while air is blasted across it. This causes the lead to oxidize, and when the final layer of lead oxide (PbO) “tears,” the silvery luster becomes apparent. The silver that becomes visible at this stage consists of at least 95 percent silver. This crude silver is further refined through either affination, electrolysis, or ion exchange.

Over 80 percent of the silver produced worldwide is obtained through this process, which functions as a closed system and is essentially environmentally neutral.

Other Methods of Extraction

Silver is now also obtained through deep-sea mining, a relatively new mineral retrieval process that takes place on the ocean floor. This is an expensive process that requires specialized ships and equipment that transports the silver-bearing deposits from the ocean

floor, some 1,400 to 3,700 meters below the surface, to the surface, processes them, and then returns the tailings back to the ocean floor. As with all mining operations, deep-sea mining raises questions about potential environmental impacts on deep-sea ecosystems, particularly now, when the threat to our oceans is unprecedented. For this reason, environmental-advocacy groups such as Greenpeace have argued that seabed mining should not be permitted in most, if not all, of the world's oceans.

A final way that silver is mined is through recycling. In this method, the anode sludge resulting from the electrolysis of affinated electrolytic copper, nickel, and lead is smelted and electrolytically refined in a solution of silver nitrate.

Now that we understand how the raw material in which silver is found is extracted from the earth and refined to become the product that we recognize as silver, let's turn our attention to how this noble metal has come to attract so much attention in recent years for its medical applications.

3

Scientific Evidence for the Medicinal Use of Silver

It is widely recognized that colloidal silver functions as a broad-spectrum antibiotic and germicidal agent that is capable of quickly killing all single-celled parasites as well as bacteria, viruses, and fungi. It has been said to be effective against some 650 different pathogens. The tiny silver molecules found in a colloidal solution can penetrate the walls of single-celled bacteria and block an enzyme needed for oxygen metabolism, causing the bacteria to die. An additional advantage of colloidal silver is that pathogens cannot develop a resistance to it.

Some of the many other benefits of using colloidal silver:

It neutralizes viruses, presumably by facilitating the formation of DNA and/or RNA-silver complexes or by destroying their nucleic acids.

It kills single-celled organisms, plasmodia, and fungi (including their spores) and attacks parasites, possibly by inhibiting phosphate intake and changing the permeability of the cell membrane.

In yeasts, it inhibits the enzyme phosphomannose isomerase, thereby inhibiting proliferation.

It suppresses the release of histamines and prostaglandins during allergic and inflammatory reactions.

It buffers against overreactions of the immune system, thereby mitigating allergic and inflammatory reactions.

It exerts an astringent effect on the surface of open wounds and significantly accelerates the healing process. It promotes the elasticity of the skin, resulting in less tearing of those areas subject to mechanical stress.

It reacts in the body as a free radical, thereby binding excess electrons; as a result, it supports the process of detoxifying following exposure to heavy metals.

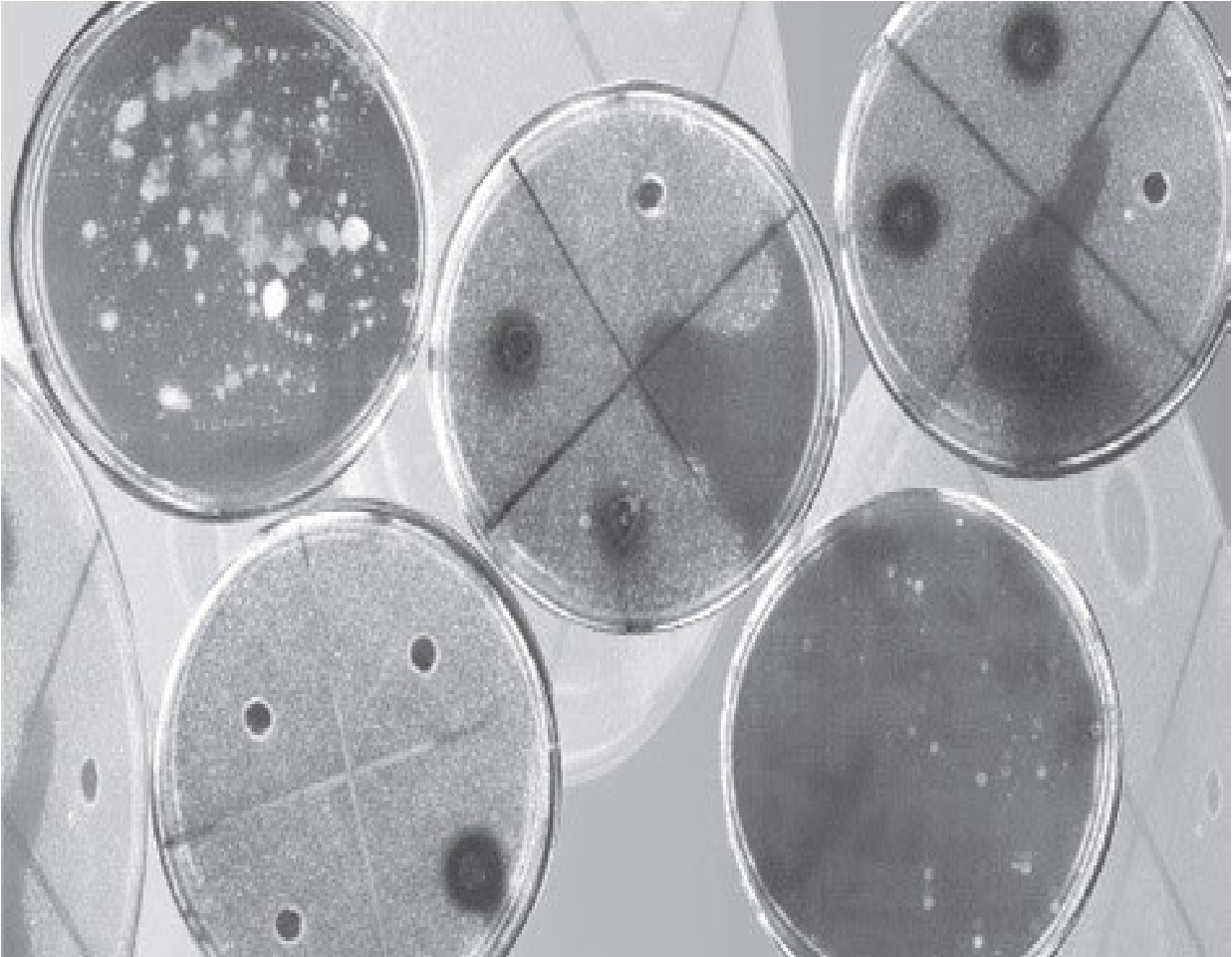


Fig. 3.1. Colloidal silver has the power to kill a wide range of in vitro pathogens.

We know of no bacterium that is not eliminated by colloidal silver with a concentration of just 5 ppm per liter within just six minutes. Furthermore, pathogenic microorganisms that have already acquired an immunity to antibiotics can be killed through the administration of colloidal silver.

Later in this chapter we will look at some of the many scientific studies that have been done on the efficacy of colloidal silver in a

host of medical applications.

THE OLIGODYNAMIC EFFECT

Colloidal silver exhibits an antimicrobial effect, and even small amounts will inactivate most bacteria and fungi. This is a result of the very small quantities of silver cations that are constantly being released from the elemental silver, which inhibit metabolism by microorganisms. This inhibitory property primarily affects the sulfur-containing groups of certain amino acids and proteins, thereby inactivating them. This mechanism of action is attributed to the oligodynamic effect, noted in chapter 1. In addition to silver, this effect has also been observed with other metals, including mercury, copper (and its alloys, brass and bronze), zinc, iron, lead, bismuth, gold, and osmium. Yet of all these metals, silver has been found to have the greatest antiseptic effects. Silver has the additional advantage of exerting no undue influences on the more highly developed cells that comprise humans and other animal species.

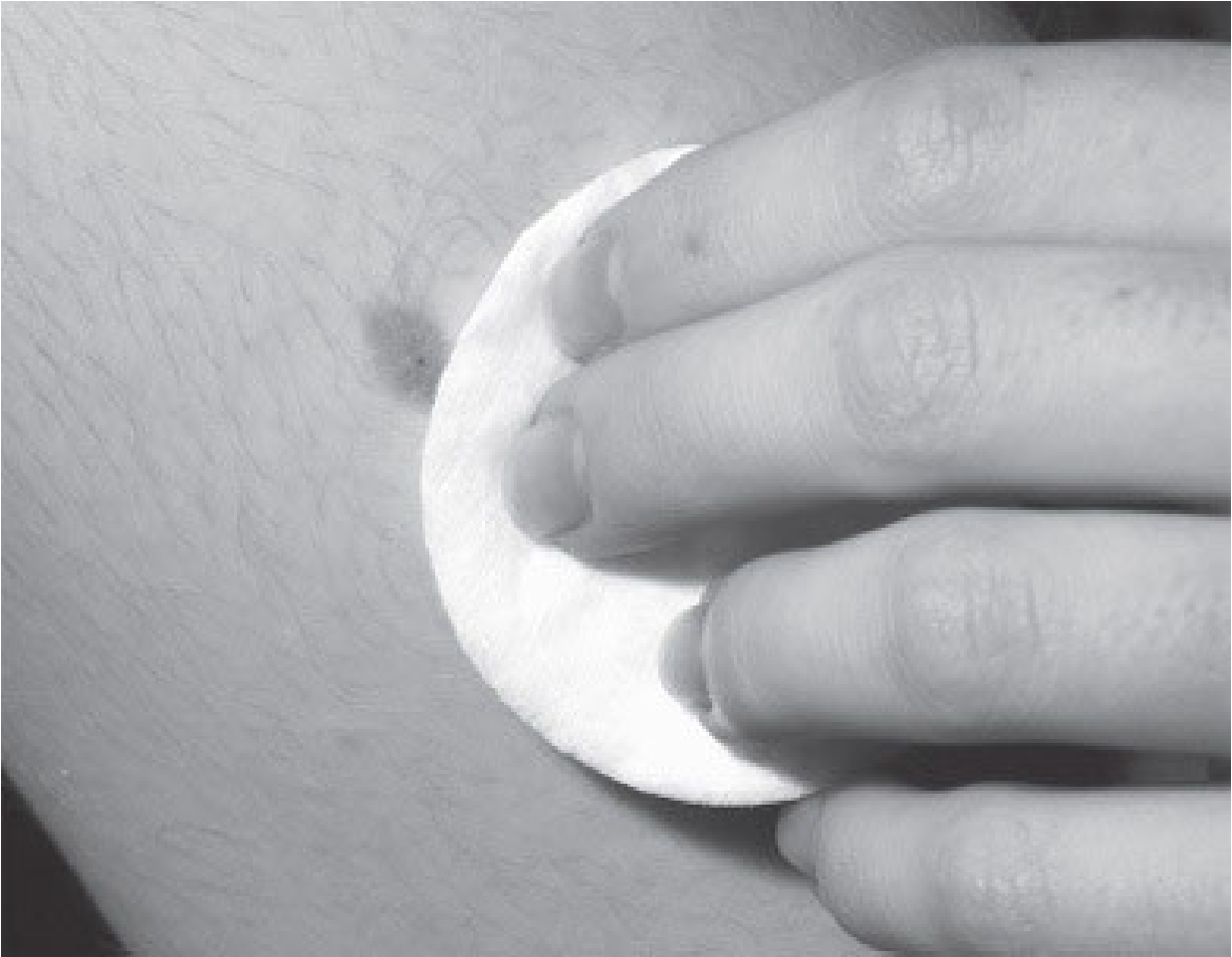


Fig. 3.2. Gauze or cotton balls dipped in colloidal silver can be used to treat wounds.

The ability of silver and silver compounds to simultaneously attack different sites involved in cellular metabolism is responsible for its broad spectrum of antimicrobial effects.

This potent antimicrobial efficacy has been attributed to colloidal silver's ability to penetrate cell walls and cell membranes and affect the interior of the cell. As we will see, various in vitro studies have demonstrated that colloidal silver can have antiviral effects too. By

attaching to the surface of the virus, the silver particles suppress the ability of the virus to bind to its host cell.

THE PHYSIOLOGY OF SILVER

Silver is not regarded as one of the essential trace elements. However, medical studies have suggested that if the amount of silver present in a person falls below 0.001 percent of their body weight, their immune system may become impaired. Silver appears to be closely involved in many of the basic processes that sustain life.

Even silver compounds may have very antiseptic effects, as the silver ions contained in the oxide layer of the metallic surface exert an inhibiting effect on the thiol enzymes in microorganisms. Silver also increases cellular pressure and mitigates inflammation as well as bacterial and fungal infections; it stimulates the bodily fluids and increases the oxygen supply.

▪

Daily Physiological Requirements for Silver

Our daily needs for silver range from 0.0014 to 0.08 mg. The silver content of various organs is as follows:

Bones: 0.01 to 0.44 ppm

Liver: < 0.005 ppm

Kidneys: < 0.005 ppm

Blood: < 0.003 ppm

■

CLINICAL STUDIES

In recent years there has been a huge resurgence of interest in medical applications for colloidal silver. This section presents an overview of some of the numerous studies that have been conducted on the efficacy of colloidal silver in treating a variety of conditions and ailments, and suggests its future potential in even more medical applications.

Antiviral

A 2005 study (Elechiguerra et al.) demonstrated that silver nanoparticles undergo a size-dependent interaction with HIV-1 virus, with nanoparticles exclusively in the range of 1 to 10 nm (nanometers) attached to the virus. Due to silver's interaction with the HIV virus via preferential binding to the gp120 glycoprotein knobs, it was determined that silver nanoparticles inhibit the virus from binding to host cells, as demonstrated in vitro.

In a 1992 study published in the Pharmaceutical Chemistry Journal (Bogdanchikova et al.), it was found that several different preparations of colloidal silver showed amazing efficacy against the smallpox virus. Two different colloidal silver preparations were used, one showing a 700 times reduction in the concentration of viral particles, and the other a 11,000 times reduction in viral particles.

A 2008 study (Rogers et al.) utilized an in vitro approach to evaluate the ability of silver-based nanoparticles to inhibit infectivity of the biological select agent, monkeypox virus (MPV), a virus prevalent in Central and Western Africa that causes a disease that is similar to smallpox, but with a milder rash and lower death rate. The results demonstrated that silver-based nanoparticles of approximately 10 nm inhibit MPV infection in vitro, supporting their potential use as an antiviral therapeutic.

The results of a variety of investigations summarized by two doctors in the Townsend Letter for Doctors and Patients (Gordon and Holtorf 2006) reveal “without question” that colloidal silver is an efficacious and cost-effective remedy against a whole host of viruses that cause upper respiratory tract infections. Researchers have concluded that it could be a promising cure for flu pandemics, as well as the other more insidious viruses HIV-1 and herpes virus.

A 2011 investigation (Lara et al.) showed that silver nanoparticles (AgNPs) are effective against many viruses and bacterial species, including MRSA, HIV-1, hepatitis B, and ampicillin-resistant *Escherichia coli*.

Antibacterial/Antimicrobial

Data from a 2013 study (Morrill et al.) supports the use of ionic colloidal silver as a broad-spectrum antimicrobial agent against aerobic and anaerobic bacteria, while having a more limited and specific spectrum of activity against fungi.

Various investigations (Rajiv *et al.* 2015; Goggin *et al.* 2014) posit that treatment of recalcitrant chronic rhinosinusitis (CRS) is a challenge, with increasing antibiotic resistance, leading to re-emergence of topical therapies. It was found that topical application of colloidal silver in a sheep model appears safe.

Proteus, a genus of Gram-negative Proteobacteria, is believed to be a possible cause of rheumatoid arthritis. A 2014 study (Disaanayake et al.) found colloidal silver to inhibit Proteus activity and hence be viable in treating or reducing the risk of rheumatoid arthritis.

One research study evaluated antibacterial and chemotactic activity due to colloidal silver nanoparticles (SNP), rhamnolipid (RL), and silver nanoparticles/rhamnolipid composite (SNPRL), using *Staphylococcus aureus*, *E. coli*, *Pseudomonas aeruginosa*, and *Bacillus subtilis* as test strains. The observation clearly indicated that SNPRL shows prominent antibacterial and chemotactic activity (Bharali *et al.* 2013).

In a 2013 study (Mathew and Kuriakose), colloidal silver nanoparticles showed highly potent antibacterial activity toward such bacterial strains as *Staphylococcus aureus*, *Serratia marcescens*, *Pseudomonas aeruginosa*, *E. coli*, and *Klebsiella pneumoniae*.

A recent study (Taglietti *et al.* 2012) of the mechanism of antibacterial activity of glutathione (GSH)-coated silver nanoparticles (AgNPs) on model Gram-negative and Gram-positive bacterial strains showed interference in bacterial cell replication for both cellular strains when exposed to GSH-stabilized colloidal silver in solution. Microbicidal activity was also observed when GSH-coated

AgNPs were (1) dispersed in colloidal suspensions, or (2) grafted on thiol-functionalized glass surfaces.

In another investigation, cationic polymer nanofibers with embedded silver nanoparticles exhibited excellent antibacterial performance against Gram-negative *E. coli* and Gram-positive *Staphylococcus aureus* (Song *et al.* 2012).

Anticancer

The results of a recent Chinese study (Guo *et al.* 2015) reveal that silver nanoparticles (AgNPs) combined with reactive oxygen species (ROS)–generating drugs and could potentially enhance therapeutic efficacy against leukemia cells, thereby providing a novel strategy for AgNPs in leukemia therapy.

The effects of synthesized (using *Moringa olifera* stem bark extract) silver nanoparticles, i.e., AgNPs, were tested against human cervical carcinoma cells (HeLa), while cell morphology was further evaluated using 4,6-diamidino-2-phenylindole (DAPI) staining. The efficiency of green synthesized AgNPs was studied with the help of fluorescence activated cell sorting (FACS) and was shown to induce apoptosis through reactive oxygen species (ROS) generation in HeLa cells (Vasanth *et al.* 2014).

The aim of a 2010 study (Franco-Molina *et al.*) to determine if colloidal silver (ranged from 1.75 to 17.5 ng/ml) had cytotoxic effects on MCF-7 breast cancer cells concluded that it did indeed induce

apoptosis, leading researchers to conclude that colloidal silver might be a potential alternative agent in human breast cancer therapy.

Biosynthesized silver nanoparticles (b-AgNPs) showed anticancer activities to different cancer cells (human lung cancer cell lines, mouse melanoma cell lines, and human breast cancer cells). The b-AgNPs also showed enhanced antibacterial activity compared to chemically synthesized silver nanoparticles (c-AgNPs). These nanoparticles were biocompatible to rat cardiomyoblast normal cell line, human umbilical vein endothelial cells, and Chinese hamster ovary cells, which indicates the future application of b-AgNPs as drug delivery vehicles. Finally, the biosynthesized AgNPs showed bright red fluorescence inside the cells that could be utilized to detect the localization of drug molecules inside the cancer cells (a diagnostic approach). All results together demonstrate the multifunctional biological activities of biosynthesized AgNPs could be applied as (1) an antibacterial agent, (2) an anticancer agent, (3) a drug-delivery vehicle, and (4) an imaging facilitator. Researchers concluded that “we strongly believe that biosynthesized AgNPs will open a new direction toward various biomedical applications in the near future” (Mukherjee *et al.* 2014).

The wide use of broad-spectrum antibiotics has led to an epidemic of multidrug resistance to many bacterial human pathogens and has created a major threat to the global health care. After extensive study, researchers (Saeb *et al.* 2014) concluded that colloidal silver is a potential novel antimicrobial agent that offers numerous advantages, such as broad-spectrum activity and lower tendency to induce resistance. In addition, the researchers concluded that the broad-spectrum bioactivities of colloidal silver makes it a potential agent in tackling the serious problem of tumors and, particularly, multidrug-resistant cancer cells. Moreover, colloidal silver can be utilized in the diagnostics and treatment of different cancers. The same group of researchers concluded that in the near future,

colloidal silver compounds “will have tremendous use as antiviral, antiprotozoal, and antiarthropod agents.”

Antifungal

An investigation (Berger *et al.* 1976) was undertaken to study the susceptibility of unicellular eucaryotic organisms (i.e., yeasts, including several species of *Candida* and one species of *Torulopsis*) to metallic cations generated by low levels of direct current. The study demonstrated that anodic silver (Ag[+]) at low direct currents had inhibitory and fungicidal properties. Growth in all isolates was inhibited by concentrations of electrically generated silver ions between 0.5 and 4.7 mug/ml, and silver exhibited fungicidal properties at concentrations as low as 1.9 mug/ml.

Antithrombotic/Antiplatelet

Nanosilver has an innate antiplatelet property and effectively prevents integrin-mediated platelet responses, both in vivo and in vitro, in a concentration-dependent manner, according to researchers who conducted ultrastructural studies that showed that nanosilver accumulates within platelet granules and reduces interplatelet proximity. The findings of this investigation further suggest that these nanoparticles do not confer any lytic effect on platelets and thus have the potential to be promoted as antiplatelet/antithrombotic agents (Shrivastava *et al.* 2009).

Dental

The antimicrobial activity of silver nanoparticles against the cariogenic bacteria *Streptococcus mutans*, *Streptococcus salivarius*, and *Streptococcus mitis*, responsible for initiation of dental caries, was evaluated and found to be effective, leading researchers to conclude that colloidal silver can be effective in preventing tooth decay (Pokrowiecki et al 2013).

In 2013, Chinese researchers (Wang et al.) concluded that a “gelatamp” colloidal silver gelatin sponge can prevent the occurrence of dry socket after teeth extraction, the use of which has wide clinical application.

STEM CELL RESEARCH

For some time, the idea of using colloidal silver to promote the formation of stem cells has been a topic of debate, and many medical professionals have strong opinions about the subject.

According to currently accepted medical thinking, when a cell divides it can only produce the same type of cell. For example, a dividing liver cell will only make more liver cells—more precisely, cells that have the same physiological functions; it will not produce a liver cell that serves a different function. In contrast, a stem cell has no specific function and can therefore develop into bone, kidney, heart, or skin cells, or any other type of tissue. A stem cell carries the DNA that makes each person unique. Consequently, a person's own stem cells represent the ideal mechanism for repairing other cells in that body.

In modern biomedicine, the use of (mostly donated) stem cells to treat such ailments as leukemia, lymphoma, paralysis resulting from spinal cord injuries, multiple sclerosis, and Parkinson's disease has met with varying degrees of success. The difficulties of using foreign stem cells derive from the fact that the person's own immune system recognizes these cells as foreign and consequently unleashes its immune response as soon as they are introduced into the body. To counteract this normal reaction, immune-suppressing drugs are administered to shut down the person's immune system. To avoid rejecting these foreign, donated cells, the person may need to regularly take these immune-suppressing medications for the rest of her or his life.

However, if a substance were able to entice the body to form its own stem cells, then there would be no need for any such immune-suppressing therapy. This was the theory of Dr. Robert O. Becker, who claimed that colloidal silver can stimulate the body to form precisely the amount of stem cells it needs to repair itself. In *The Body Electric*, he reviews his experiments in regenerating full limbs in humans. Although Dr. Becker ran out of research funds before he completely succeeded in accomplishing this, in seven years of research he found that a very low DC electrical current run between a positive and a negative electrode produced a healing effect in bones. He experimented with a variety of metals, but found that silver was more effective by far than any of the other metals he tried (gold, platinum, stainless steel, etc.). He concluded that the body, in the presence of sufficient silver ions, could produce all the stem cells it needed. He stated:

We may only have scratched the surface of positive silver's medical brilliance. Already it's an amazing tool. It stimulates bone-forming cells, cures the most stubborn infections of all kinds of bacteria, and stimulates healing in skin and other soft tissues. . . . Just before our research group was disbanded, we studied malignant fibrosarcoma cells (cancerous fibroblasts) and found that electrically infected silver suspended their runaway mitosis. Most important of all, the technique makes it possible to produce large numbers of dedifferentiated [i.e., stem] cells, overcoming the main problem of mammalian regeneration—the limited number of bone marrow cells that dedifferentiate in response to electrical current alone. Whatever its precise mode of action may be, the electrically generated silver ion can produce enough cells for human blastemas; it has restored my belief that full regeneration of limbs, and perhaps other body parts, can be accomplished in humans. (Becker and Selden 1985, 175)

Normally, the human body has only a limited ability to heal itself of defects without the aid of its own stem cells. New tissue is produced through the division of already existing tissues. However, the greater the amount of tissue that has been damaged, the less the body may be able to regenerate the tissues it needs to heal. This forces the body to make use of the cells that remain, regardless of their quality. For example, in the case of a skin injury, the wound heals from the outside in. When an extensive injury makes this type of healing impossible, the deformed cells that are still present will produce a “defective” type of scar tissue that has the same features as the cells from which they were derived. It is for this reason that a permanent scar usually results. However, with the use of colloidal silver, the body can produce its own stem cells at the site of the injury and make them available for healing from the inside out, thus eliminating the body’s production of scar tissue. This indeed was what Dr. Becker proposed and discovered in a number of experiments. His conclusions in essence give us a nonpatentable method for producing stem cells and making these available to the human (or animal) body. This greatly expands the potential medical uses of colloidal silver.

Cancer researcher Gary Smith, MD, arrived at similar conclusions:

Success [in cancer treatment] depends on silver in the person’s body. When silver is present, the cancer cells dedifferentiate and the body is restored. . . . When silver levels are . . . nonexistent, the cancer growth rate . . . continues . . . because the cells cannot dedifferentiate. I suspect a silver deficiency is possibly one of the reasons cancer exists and is increasing at such a rapid rate. (Robey 2008, 34–35)

Our own experiences confirm the theories of Becker and Smith. For example, two years ago, Werner’s wife was bitten by a German shepherd while taking her morning walk. The resulting wound displayed the animal’s entire set of teeth, and there were deep injuries. The wound was treated using only colloidal silver, and today there is no scar. The only possible explanation for this effect is the activity of colloidal silver to produce stem cells; all other attempts at an explanation fall short. We now use colloidal silver not only to treat all bites, injuries, and wounds, but also in all of those cases in which we are convinced that tissues must be regenerated or even formed anew. Moreover, we are now convinced that colloidal silver can be used not only as a basic therapy for treating all types of cancers, but also as a means of preventing various cancers. The future will show how far this insight will establish itself in natural healing practices, and the speed with which therapists will accept and apply this knowledge.

COLLOIDAL SILVER’S TARGETS

PATHOGENS	GROUP	RESULTING ILLNESS
Adenoviruses	virus	flu
Actinomyces israelii	bacteria	cutaneous actinomycosis
Ascaris lumbricoidea	roundworm	ascariasis
Bacillus anthracis	bacteria	anthrax
Bordetella bronchiseptica	bacteria	kennel cough (bordetella)
Bordetella pertussis	bacteria	whooping cough (pertussis)
Borrelia burgdorferi	bacteria (spirochete)	Lyme disease
Bornavirus spp.	virus	febrile disease of horses and sheep
Brucella abortus	bacteria	brucellosis

<i>Candida albicans</i>	fungus	thrush
<i>Caryospora bubonis</i>	protozoa	bowel disease of different animals
<i>Chlamydia psittaci</i>	bacteria	psittacosis
<i>Clostridium botulinum</i>	bacteria	botulism
<i>Clostridium tetani</i>	bacteria	tetanus
<i>Coccidia</i>	protozoa	digestive illnesses in pets, ruminants, poultry, etc.
<i>Corynebacterium diphtheriae</i>	bacteria	diphtheria
<i>Cryptococcus neoformans</i>	fungus	cryptococcosis (meningitis, skin, bone, and lung)
<i>Cryptosporidium</i> spp.	protozoa	human and animal diarrhea
<i>Echinococcus</i> spp.	worms	canine tapeworm
<i>Enterobius vermicularis</i>	worms	pinworms
<i>Giardia intestinalis</i>	protozoa	giardia
<i>Haemophilus influenzae</i>	bacteria	arthritis, endocarditis, meningitis, osteomyelitis
Herpes simplex	virus	cold sores/fever blisters
<i>Legionella pneumophila</i>	bacteria	Legionnaires' disease
<i>Leptospira interrogans</i>	bacteria	leptospirosis
<i>Meningococcus</i> (<i>Neisseria meningitidis</i>)	bacteria	meningococcal disease
<i>Myxovirus influenzae</i>	virus	flu, mumps, and others
<i>Mycobacterium leprae</i>	bacteria	leprosy
<i>Mycobacterium tuberculosis</i>	bacteria	tuberculosis
<i>Neisseria gonorrhoeae</i>	bacteria	gonorrhea
<i>Nosema apis</i>	protozoa	nosemosis (honey bee disease)
Papillomavirus	virus	warts
<i>Plasmodia</i>	protozoa	malaria
<i>Pneumococcus</i> (<i>Streptococcus pneumoniae</i>)	bacteria	pneumonia
<i>Poliomyelitis virus</i>	virus	polio
<i>Pseudomonas mallei</i>	bacteria	glanders (horse, mule, and donkey disease)
Rhinovirus	virus	common cold
<i>Rickettsia rickettsii</i>	bacteria	Rocky Mountain spotted fever
<i>Salmonella paratyphi</i>	bacteria	paratyphoid fever
<i>Salmonella typhi</i>	bacteria	typhoid fever
<i>Shigella paradysenteriae</i>	bacteria	shigellosis (bacillary dysentery)
<i>Staphylococcus</i> spp.	bacteria	staph infections (endocarditis, scalded skin syndrome)
<i>Streptococcus</i> spp.	bacteria	strep throat, impetigo, scarlet fever, toxic shock syndrome
<i>Streptomyces</i> spp.	bacteria	streptococemia
<i>Treponema pallidum</i>	bacteria (spirochete)	syphilis
<i>Trichophyton rubrum</i>	fungus	athlete's foot, jock itch, ringworm
Varicella zoster	virus	shingles, chickenpox
<i>Vibrio cholerae</i>	bacteria	cholera

4

Making Colloidal Silver

A colloid is a substance in which one substance of microscopically dispersed insoluble particles is suspended throughout another substance. Colloidal particles are the smallest pieces into which a substance can be broken down without losing its specific properties. The next step in the process of producing ever smaller particles would be the atom itself.

A colloid has a dispersed phase (the suspended particles) and a continuous phase (the medium of suspension). To qualify as a colloid, the mixture must be one that does not settle or would take a very long time to settle. Colloidal particles carry an electrical charge; in the case of making your own colloidal silver, the silver is generally suspended in distilled water. Because particles with like charges repel one another, the particles help maintain one another in suspension in the water medium.

Colloidal materials play an extremely important role in nature. The cell is the most basic unit of life, and many of the processes that enable a cell to live are made possible by materials that are in a colloidal state, such as enzymes. For example, in humans, both the thyroid gland and the intermediate lobe (pars intermedia) of the pituitary gland contain colloid follicles. Other examples of colloids

include freshly squeezed orange juice, milk, detergents, the coatings found on photographic films, as well as smoke and fog.

Scientifically speaking, a colloidal system is present when three conditions are met:

Different components must be present, e.g., silver and water.

The components must be present in different phases, such as fluid/solid or gaseous/fluid.

The particles cannot be soluble.

As a result of these three conditions, colloids are heterogeneous, multiphasic, and insoluble.

The presence of a colloid solution in a liquid can be detected by shining a fine beam of light through the liquid in a darkened room. The resulting conelike area of brightness is a product of what is known as the Tyndall effect, named after nineteenth-century physicist John Tyndall. This effect occurs as the light is scattered by the particles in the colloidal solution. The Tyndall effect can be most readily observed by shining a flashlight through a small hole, one to two millimeters. The Tyndall effect is seen when light-scattering particulate matter is dispersed in an otherwise light-transmitting medium, when the cross-section of an individual particulate is in the range of 40 to 900 nanometers, i.e., somewhat below or near the

wavelength of visible light (400 to 750 nanometers). It is particularly applicable to colloidal mixtures and suspensions; for example, the Tyndall effect is used commercially to determine the size and density of particles in aerosols and other colloidal matter.

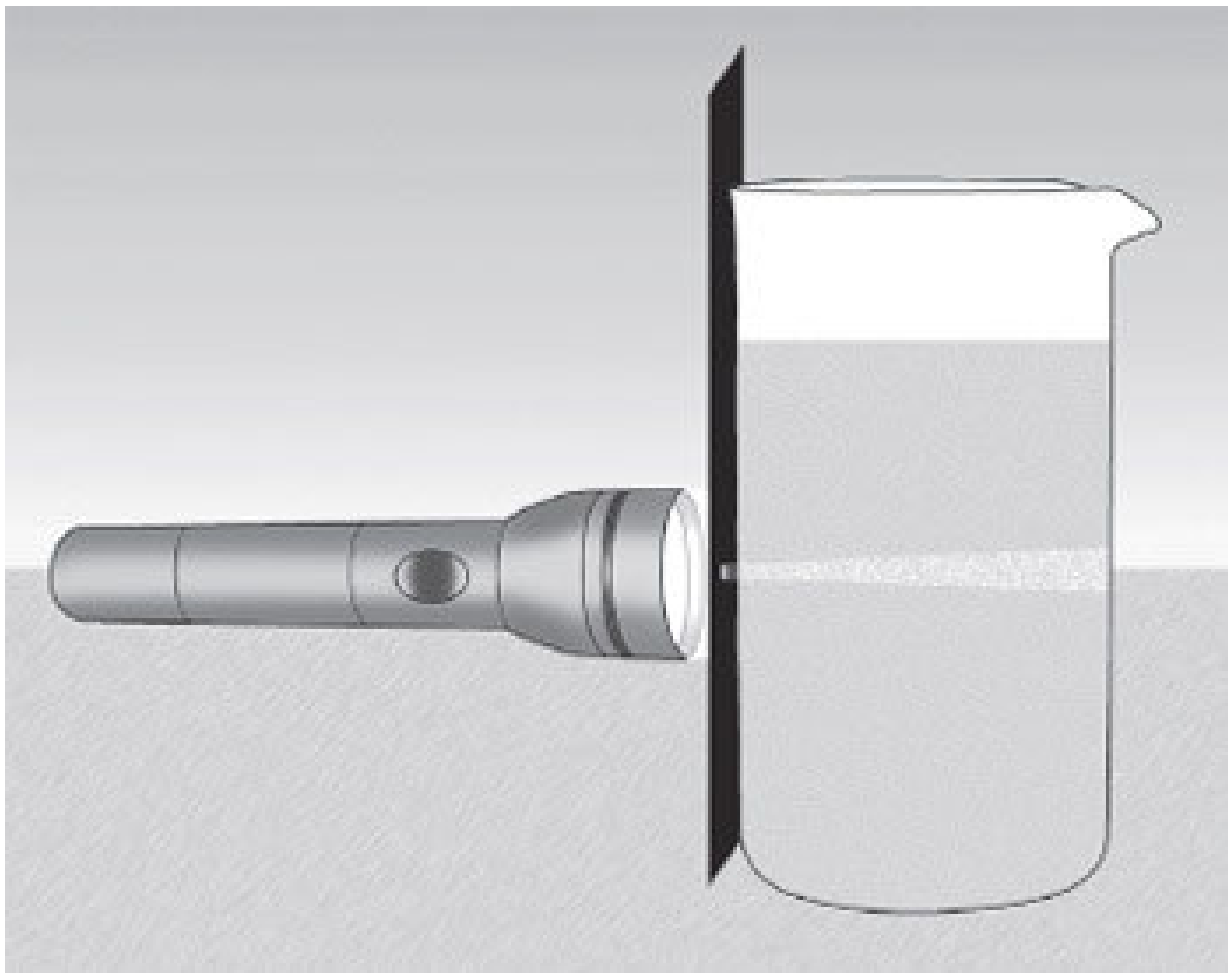


Fig. 4.1. The Tyndall effect

SILVER COLLOIDS AND HOW THEY WORK

Colloidal silver is a special form of silver. As previously noted, it was used to treat infections all the way up until the first half of the twentieth century, when pharmaceuticals became the preferred method. The colloidal silver of years gone by was produced by discharging an electrical current under water. Due to both its high costs as well as problems in ensuring quality and standardization of the solution, this method of producing colloidal silver was eventually abandoned.

The modern method of producing colloidal silver results in the purest, electrically charged silver particles suspended in distilled, demineralized water through a process of electrolysis. By immersing two silver rods in water and running an electric current between them, silver particles and silver ions are released into the water. Each of these particles contains some 10^3 to 10^6 atoms of silver and is usually between 0.01 and 0.01 micrometers in size. Their presence can be seen as a golden or silver cloud or haze in the water. No matter how strong or weak the concentration might be, the size of the particles will not be homogenous.

The silver particles have a positive electric charge, so that they repel one another in water. This holds them in balance and keeps them uniformly dispersed in the water. The repulsion that occurs as the particles approach one another is apparent under a microscope, and is known as Brownian motion, after the Scottish botanist Robert Brown, who first observed this effect in the nineteenth century. The concentration of silver can range from 3 to 50 ppm (parts per

million), meaning that each liter of water contains between 3 and 50 milligrams of silver.

Breaking down a material into microscopically small particles significantly increases the total surface area and thus the material's efficacy, and the effects the material can produce are similarly magnified. The very small size—the oligodynamic effect noted in the previous chapter—also enormously improves the possibility for the silver to reach and penetrate even the most remote regions in the body. Silver colloids are of particular interest in this regard because the noble metal silver is the best natural electrical conductor known.

Primarily because of the influence of both light and electromagnetic fields, the particles will lose their electrical charges over time. As this occurs, the smaller particles attach themselves to the larger particles.

METHODS FOR MAKING COLLOIDAL SILVER

Colloidal silver can be produced through three methods: mechanical, chemical, and electrical.

Mechanically, silver can be crushed in a mortar. Since Samuel Hahnemann first spelled out his guidelines in 1820, homeopathic ARGENTUM METALLICUM has been produced by grinding metallic silver in a mortar and mixing the result with lactose. Colloidal silver can also be produced by mechanically pulverizing it in a colloidal rotor-stator mill. The rotor turns at a rate of 3,000 to 6,000 revolutions per minute. The resulting hydraulic pressure in the grinding chamber, together with the impact and chopping effect, pulverizes the material and disperses it into the suspension fluid. One can change the size of the particles by adjusting the gap between the rotor and the stator. This method is still used in homeopathy, and some potencies may require up to four hours of grinding. The resulting powdered colloid is not identical with colloidal solutions that are produced using electrical methods.

Colloidal silver can also be produced through an entirely chemical process involving the reduction of silver salts, however, this method is now entirely outdated.

Colloidal silver can be produced through two different types of electrical processes: either by passing a high-voltage arc under water and causing precipitation, or by using a low-voltage electrogalvanic process.

Today, most colloidal silver is produced by electrolytic means by using water that has either been treated through reverse osmosis or preferably steam-distilled water that is in a slightly warm state. The concentration of colloidal silver that will result depends largely on the conductivity of the water, the amount of time, the temperature of the water, the distance between the electrodes, the strength of the electrodes, and the voltage applied. For this reason it is best to use standardized devices that make it possible to dependably regulate the concentration of colloidal silver.

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Should You Make Your Own Colloidal Silver Generator?

The Internet contains many different instructions, including wiring diagrams, for making your own silver generator for much less than those that are offered by various manufacturers. At first glance, this may appear to be a very attractive way to ensure a steady supply of colloidal silver, and with a little bit of skill you might think that it should be possible to build a device yourself. Some may turn to an amateur hobbyist who knows how to make electronic devices, and the price that you might be quoted for such a device can be very appealing. You may also run into links with such titles as “immunity with colloidal silver” that will lead you to a do-it-yourself group that will help you make your own silver generator. However, our experience has led us to recommend that you avoid building your own device. When building a silver generator, it is assumed that the electrical conditions in your solution will always be the same. The variations in electrical current that can occur as a result of different temperatures and the decreasing size of the electrodes are not taken into account. For more information on where you can buy a standardized colloidal silver generator, see the resources section at the end of this book.

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Making colloidal silver through low-voltage electrolysis requires a direct current source of power, two silver electrodes made of the finest 99.99 percent silver, and a mount for placing these in a glass beaker. Metal containers are unsuitable for two reasons: the metal may contaminate the water, and the colloidal silver may deposit itself on the walls of the container, thereby silver-plating it.

A DC current of approximately 24 volts has been found to work best. Using currents lower than this will prolong the process and produce a colloidal silver of uncertain quality. We strongly recommend not using a 9-volt system.

When the direct current is applied, ions—i.e., colloidal particles—flow from the anode. As their concentration increases, the water at first turns yellowish and then a shimmering gold. A gas is discharged at the cathode, while a black layer of what is known as anode slime forms on the anode. After removing the mount, use a damp cloth to wipe off this layer. The electrode that has been releasing the silver will have become imperceptibly thinner. Depending on the conditions, running this process for approximately ten to fifty minutes will yield 200 ml of colloidal silver with a concentration of approximately 3 to 50 ppm (parts per million) in steam-distilled water. Heating the water accelerates the process and significantly improves the quality of the finished product (see details on this method below).

All of the reliable commercially available devices for making colloidal silver include information about the amounts and concentrations of colloidal silver they will produce over a particular period of time. Of course, this information will vary from one type of device to the next.

The specific conditions in which this process takes place will affect the concentration of silver particles, the size of the particles themselves, and the extent to which the suspended colloids may clump together. The actual size of the particles can only be determined by using an electron microscope, a time-consuming, costly procedure, and one that is inaccessible to most people. Moreover, the particles can only be measured if they have attained a certain minimum size. For this reason, any tests one might perform to determine the size of the particles in a particular solution will yield varying results, depending on when these tests are carried out.

In a colloidal fluid, the colloids move more or less easily; the larger the particles, the more noticeable are the effects of the gravity, and this will cause the particles to settle.

The Hot-Water Method

Today, the hot-water method is the surest and best method for producing colloidal silver using a standardized device. Boil distilled water in an inflammable glass or porcelain container and then cool for approximately ten minutes, to approximately 140 to 185 °F (60 to 85 °C). It is recommended that you avoid using containers made of stainless steel, aluminum, iron, or cast iron, as these will release too many metal particles into the water.

Once it has cooled, transfer the water into a glass container with an opening that is small enough for the silver generator to be placed on it without falling into the water (such as a quart canning jar). The water should be filled to about two centimeters below the upper rim of the container so that the silver rods are immersed into the water

as far as possible. Switch on the device by plugging the transformer into an outlet. As the current begins to flow, an indicator lamp will light up on the silver generator, showing that the process of electrolysis has begun. The amount of time required to complete the process will vary depending on the device and the desired concentration.

Once the process is complete, remove the power cord from the outlet, take the silver generator out of the container, and using a glass funnel, pour the silver colloid into a bottle made of brown or violet glass (not plastic). Despite what you may have read elsewhere, it is not necessary to produce colloidal silver under airtight conditions. Colloidal silver is effectively stable and will not react to the air above it.

WATER QUALITY

The instructions included with some devices for producing colloidal silver that use 9-volt batteries assume that a person is using strongly conductive spring water or even tap water; some even recommend adding table salt to the water you are using. To be sure, water must have a certain degree of conductivity for a current to flow through it. Normally, this is made possible by the minerals and salts that naturally present in the water, typically at concentrations of about 2,000 to 3,000 ppm. However, the compounds that carbonates, chlorides, and sulfates tend to form with silver are insoluble, and these will precipitate out and cloud the solution. While this will produce silver salts, it will not produce colloidal silver. However, there is another reason for avoiding tap water when producing silver: it oftentimes contains ozone or chlorine that has been added as a disinfectant.

Well water is also not desirable because of its high carbonate, bicarbonate, chloride, and sulfate contents. This means most well water has an electrical conductance of 600 to 800 microsiemens—too high for making colloidal silver.





Fig. 4.2. Making colloidal silver with an electrolytic silver generator

Water that has been demineralized through a process of ion exchange is also not suitable for making silver colloids. Ion exchange (IE) is a water treatment method whereby one or more undesirable contaminants are removed from water by exchange with another nonobjectionable or less objectionable substance. Both the contaminant and the exchanged substance must be dissolved and have the same type (+,-) of electrical charge. One example of IE is the process called water softening.

More reliable results can be obtained using water processed through reverse osmosis, which has an electrical conductivity of only 5 to 20 microsiemens. Demineralized water, in which the minerals are removed by filtering the water through artificial resins, can be purchased from a variety of sources. Both it as well as distilled water are suitable for making silver colloids.

Finally, the power that is being provided to the device also influences the type of water than can be used to make colloidal silver. The higher the voltage being applied to the electrodes, the more likely it is to produce colloidal silver in highly purified water, and the more effective the solution will be.

QUALITY CRITERIA FOR COLLOIDAL SILVER

When a standardized generator is used, and when the conditions under which the colloidal silver is being produced remain constant, then it is possible to obtain both consistent concentrations and especially small particles of colloidal silver. It is important to know the ppm contained in the solutions you are using, and you should try various concentrations of between 5 and 50 ppm to see how they affect you. In some cases, a concentration of 5 to 10 ppm may be just as effective as a concentration of 20 to 30 ppm.

When storing colloidal silver, care should be taken that it be kept uniformly cool and not subjected to any large fluctuations in temperature. Because of the electrical and magnetic fields that are present, a refrigerator is not a suitable storage site. Ideally, colloidal silver should be stored at a temperature between 59 and 68 °F (15 and 20 °C). Because light will quickly oxidize colloidal silver into ineffective silver oxide, colloidal silver is best stored in a dark glass bottle. Metal and plastic containers allow colloidal silver to quickly separate, as will electrostatic fields (such as those produced by a refrigerator). For this reason, even glass bottles with plastic tops should always be stored with the top up. Also, you should immediately remove any spray device you may require, as with external application, after use. It is best to ingest colloidal silver directly out of a glass, and definitely not off of a metal spoon.

The older the colloidal silver, the weaker its physiological effects; the fresher it is, the stronger its effects. This may be related to the size of the particles. For therapeutic purposes, it is best to use fresh silver. This is particularly true when taking colloidal silver to treat

Lyme disease (see chapter 5), especially its neurological manifestations, as only very small colloidal particles are able to pass through the blood-brain barrier. On the other hand, preparations of colloidal silver that are over five months old have been found to be effective in treating intestinal problems.



Fig. 4.3. Colloidal silver should be stored in a dark glass bottle.

When properly stored, colloidal silver can remain effective for three to four months. Consequently, it can be purchased from pharmacies, health-food stores, and similar sources. Because of legal restrictions

in some countries, colloidal silver is sometimes marketed as an agent for controlling plant pests.

COLORED SOLUTIONS OF COLLOIDAL SILVER

During our more than ten years of making colloidal silver we have produced over 3,000 liters. While most of this was as clear as water, we very occasionally found that the colloidal silver changed color and became a yellowish, bluish, violet, or even a slightly brownish fluid. These variations occurred despite the consistent conditions under which we make our preparations: always in the same places, at essentially consistent temperatures, and using the same quality of water. Moreover, hundreds of telephone conversations with patients and clients who have made their own preparations of colloidal silver have informed us that many of them have had similar experiences.

Some companies that sell colloidal silver solutions claim that the more yellow the solution, the better the colloidal silver. Our experiences do not back these kinds of claims, which we have frankly found to be false. The reasons given in support of these claims are purely conjectural; we frankly know of no physicochemical phenomenon that would explain why some devices produce these colored solutions and others do not.

In contrast, our years of experience have shown us that solutions of colloidal gold are always colored. All of the preparations of colloidal gold that we have produced had a color that varied from deep yellow to red.

5

Using Colloidal Silver

At the outset of this chapter we wish to emphasize that colloidal silver should not be regarded as a substitute for any medical measures. Our recommendations assume that the person who is treating an ailment is under the care of a doctor or other health care practitioner. When considering whether to use colloidal silver, people should always discuss this with the physician or health care practitioner who is treating them in the context of all of the other therapeutic measures being taken.

DETERMINING DOSAGE AND METHODS OF ADMINISTRATION

Because even the smallest amount of colloidal silver will kill pathogens, a small dose is usually sufficient. The dosage guidelines provided in this chapter are based on our own practical experiences obtained during the past decade. We have found that colloidal silver can be administered successfully in one of two different ways: relatively low doses and high doses. While our experience administering low doses has produced good and rapid outcomes, we tend to favor high doses.

At this time there does not appear to be any definitive information about which method is better, the low dose or the high dose. Consequently, we suggest you determine dosage and length of administration on a case-by-case basis, preferably using the muscle-testing (kinesiology) or pendulum method. When using either of these methods, the following questions might be helpful in obtaining the information you need to determine which dosage is correct for you:

Is the application external? yes/no

Is the application internal? yes/no

What is the optimal concentration in ppm?

How many times per day should it be used?

How many tablespoons should be used?

For how many days should it be used?

A low dosage is around 2 tablespoons (30 ml) of a 3 to 5–ppm solution of colloidal silver, taken one to two times daily.

A moderate dosage is around 2 teaspoons to 1.5 tablespoons (10 to 20 ml) of a 25 to 30–ppm solution of colloidal silver taken two to three times daily.

A high dosage is around 3 tablespoons to three quarters of a cup (50 to 150 ml) of a 25 to 30–ppm solution of colloidal silver, and the solution may range as high as 50 ppm.

A few additional guidelines:

10 ppm: used primarily for disinfecting large areas

25 ppm: an all-purpose dose that can be used over extended periods of time to treat most bacterial infections and for general use

50 ppm: taken for up to fourteen days for fungi, viruses, and more intractable bacterial infections

100 ppm: taken for up to eight days for stubborn external fungus infections and for severe acute illnesses

200 ppm: taken on a short-term basis for up to five days (longer, in some unusual cases) for the most serious acute illnesses

In contrast to what was once recommended, current thinking is that colloidal silver solutions should not, or should only rarely, be diluted in water prior to ingestion. As a general rule, better results in treating acute illnesses can be achieved by administering higher doses of silver solutions several times daily. In cases of acute illnesses, there is no reason to be concerned about increasing a daily dosage to as high as nearly a full cup (200 ml) of a solution. Other therapists have reported that they have obtained similar results. When using quantities greater than the teaspoon and tablespoon/milliliter amounts given in this book, it is best to sip the solution over the course of the entire day.

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Measuring: U.S. System versus Metric System

Note that in most cases when we give dosage amounts in this book we have rounded out the U.S. measurement system of teaspoon/tablespoon/cup; if you wish to be more precise, use the metric unit measurement provided. Metric conversion tables are readily available on the Internet: 1 tablespoon contains approximately 8 to 10 ml, while 1 teaspoon contains approximately 3 ml. As a reference, we suggest pouring the equivalent amount of water into a shot glass, which holds around 2 tablespoons of liquid (20 ml), and take note as to how high the glass is filled. The colloidal silver should always be

consumed out of this glass or another glass container, or out of a ceramic spoon.

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To treat chronic and systemic illness, the dosage can be increased to up to double or even triple the recommended amount for the first week to ten days of treatment, after which it should be decreased to a maintenance dose.

When possible, colloidal silver is best taken between meals. When treating illnesses of the digestive tract, and especially of the colon, it is best to drink the silver solution as quickly as possible. For other conditions, it is better to hold and “chew” the silver solution in the mouth so that the oral mucosa can begin the process of absorbing the active substances. When using colloidal silver to help rebalance and restore intestinal health, high dosages should be administered for some two weeks, after which the dosage can be reduced by half. After four weeks, end this regimen and, if needed, take probiotics to restore the intestinal flora.

When taking colloidal silver to maintain health or prevent illness, taking 1 tablespoon (45 ml) of solution on a daily basis is sufficient. During the cold time of the year, taking colloidal silver once a day for four weeks will help support your immune system.

When treating children, reduce the amount to be used to one half of the recommended adult dosage; for infants use a 5-ppm solution of colloidal silver.

To treat metabolic illnesses (i.e., any condition that interferes with the body's chemical processes involved in growth, maintenance of healthy tissues, disposal of waste products, and production of energy to fuel body functions), colloidal silver should be administered for as long as it takes to see an improvement and alleviation of the symptoms; afterward, continue administering the same dose for at least another two weeks.

For external use, colloidal silver can be massaged locally into the affected area, sprayed onto the area, or a dressing or bandage impregnated with colloidal silver can be placed directly onto the area. A colloidal silver solution can also be safely instilled directly into the eyes or onto a wound.

ACHIEVING COMPLEMENTARY EFFECTS

As long as one takes care not to ingest all of the substances prescribed by alternative methods at the same time, colloidal silver can be used to good effect when combined with other forms of therapy, such as gem essences, flower essences, homeopathic agents, and biochemical salts. However, when used in conjunction with other such methods, be advised that it is best to wait fifteen minutes to a half hour between the ingestion of the different substances.

The use of colloidal silver should also be staggered with such substances as essential oils, salt solutions, silicic acid gel solutions, and medicinal herbal teas. Colloidal silver and essential oils should not be applied externally at the same time (and at the same location). When using any essential oils externally, one should wait for four hours before applying a colloidal silver solution.

Exploiting the Vector Effect of Essential Oils

Because they are able to bind other compounds to themselves and then transport these, essential oils possess what is known as a vector effect. This can help these other substances overcome the otherwise impenetrable skin barrier and make their way into the adipose tissue that lies below. From there, the blood can also carry them to other parts of the body. By exploiting the vector effect of essential oils, it is possible for medicines—and for heavy metals—

that would normally not be able to penetrate the skin to enter the body.

Because colloidal silver, like all other metals, is not normally able to diffuse through the skin, its effectiveness in treating some skin illnesses is limited. But by exploiting the vector effect, the effectiveness of the colloidal silver can be magnified. For this reason, it is helpful to massage a few drops of lavender oil into the areas of skin that will later be treated with colloidal silver. Wait at least four hours after applying essential oil to apply colloidal silver. This will enable the colloidal silver to penetrate below the skin's surface to unfold its effects.

Drink Water!

To enable the removal and excretion of pathogens and other toxic materials through the urinary tract, it is imperative that one consume extra amounts of water while taking colloidal silver. Almost all of the complaints that have been reported by people undergoing treatment with colloidal silver can be traced back to their failing to drink enough water every day. The minimum amount of pure drinking water (not distilled water, which flushes needed nutrients from the body) that should be consumed each day is 6 to 8 cups (1.5 to 2 liters). Note that other types of beverages do not count toward this total. The water should not be carbonated, and minimally mineralized water works best. Normal tap water can be used if it has been filtered through activated charcoal or processed using a reverse osmosis system.

However, the quantity of water or fluids just mentioned is purely theoretical. In reality, far too many people, for one reason or another, drink entirely too little water even when they are seriously ill. Older people in particular are often unable to consume more than one liter of fluid throughout the day, even when they are continuously reminded to do so. In such situations, the effects of colloidal silver may not be quite as dependable as when sufficient quantities of water are consumed.

STORAGE AND SHELF LIFE

Because their electrical charge causes the particles in a colloidal solution to repel one another (and thereby remain in balance, maintaining their sometimes very small sizes), it is important to avoid anything that could lead to a loss of this charge, such as sunlight and electrical and magnetic fields. This means that colloidal silver should not be stored in the refrigerator, near the power supply of a telephone or other similar device, near a computer, or near electrical devices when they are plugged in.

Because of its electrostatic charge as well as its surface composition, colloidal silver can lose its charge to plastics and metal, leading to the formation of fine gray deposits. It is for this reason that it should be stored in a glass container that is kept in an upright position, and that any spray devices that may be used to administer the silver externally be removed right after use.

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Can Colloidal Silver Be Stored for Longer Periods of Time?

Some manufacturers of colloidal silver claim that their product can be stored for up to two years (and that their colloidal gold has a shelf life of up to ten years). This remarkable physical quality is said to result from the specialized apparatus they use to make their preparations. The secrecy that surrounds both this apparatus and the production method make it difficult to evaluate such claims. Supposedly the properties of this colloidal silver differ from other

preparations because its size inhibits sedimentation. For now, there is nothing that can be done to verify or refute such statements. While the Tyndall effect does make it possible to verify if a colloid is indeed present, it does not permit any statements about the potency of the colloid.

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To be most effective, colloidal silver should be used within the first month after it was made, although it will remain effective for a period of three months. As sedimentation and electrical discharge occurs, the silver particles will clump together into larger clusters and settle on the bottom of the container; for this reason, older bottles should be shaken before use. However, colloidal silver can continue to be effective for a longer period of time if it is stored properly, although the older the colloidal silver, the larger the particles will become. Its effectiveness over a reasonable amount of time may be a result of the water receiving vibrational information from the silver.

RISKS, LIMITATIONS, AND SIDE EFFECTS

Colloidal silver is one of the safest, most powerful medicines available to us. It does not interact with any other medications, nor does it upset the stomach; in fact, it is a digestive aid. However, when consuming larger quantities of silver, one's diet should be supplemented with yogurt or lactobacilli, or other steps should be taken to compensate for the possible loss of beneficial bacteria. In contrast to antibiotics, colloidal silver does not weaken the immune system but relieves it, and may even strengthen it to a high degree.

Colloidal silver does not sting the eyes if using in the eyes. A host of medical journal reports and documented studies spanning the past hundred years indicate that there are no known side effects whatsoever from oral or intravenous administration of colloidal silver in both animal and human studies. It has been used with good results under the most demanding health care circumstances. It is possible that a person might find their symptoms worsening when they first begin consuming colloidal silver, but such epiphenomena as fatigue or chills typically subside after just two to three days and are often symptoms of healing as toxins are released. In rare cases, a person might initially experience a shift in their emotional state or mild nausea. Some persons have reported experiencing flatulence, but this does not usually occur even when silver is used for a longer period of time.

Any therapy that does not take a person's mental and psychological circumstances into consideration can only ever be partially successful. In this respect, colloidal silver is not a panacea that

averts the need to consciously reflect on the disease and the circumstances of one's life.

Critics have suggested that the long-term use of higher dosages of silver preparations can cause silver to accumulate in the skin, eyes, and inner organs. It should be noted, however, that a person would have to ingest 3.8 grams of elemental silver for this to occur. In our opinion, problems can only arise if a person were to ingest a half a cup (100 ml) of a 25-ppm solution (which equals some 2.25 mg) daily for fifty months—approximately four years—to reach a concentration of silver in the body that could be harmful.

There are recorded instances where the ingestion of silver and certain kinds of silver compounds has resulted in problems. Certain pharmaceutical preparations with high silver content—as opposed to colloidal silver—can result in irreversible silver deposits in an organism, especially when such a pharmaceutical is used over a long period of time. This can lead to argyria (a darkening/bluing of skin color), argyrosis (deposits, especially in the eyes), and neurological problems. Silver can also accumulate in the blood vessels and the liver, kidneys, spleen, and the central nervous system.

It should be noted that during the past century, chronic upper abdominal pains and central nervous system ailments, including disturbances of taste and balance, dizzy spells, and seizures, have all been attributed to the effects of preparations of silver nitrate—again, not the same as colloidal silver. Neither has any actual allergic reaction to colloidal silver been observed in recent history. This may have to do in part with the fact that the electrodes used to produce colloidal silver are of a higher degree of purity than any silver jewelry (which does cause allergic reactions in some people) could ever

attain. The silver that is used for jewelry purposes always contains other metals, such as copper and nickel.

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Argyria, the Blue Man Phenomenon

Argyria is an irreversible, slate gray or grayish blue discoloration of the skin and mucosa that typically appears as a generalized (rather than a localized) phenomenon, which is attributed to the ingestion of silver. It should be noted that the only problematic aspect of argyria is cosmetic. The grayish pallor of the skin is affected by light. One of the first signs of argyria is the appearance of a slate gray silver line on the gums or a similar discoloration of the lunula, the white, crescent-shaped area at the base or bed of the fingernails. When silver accumulates in the eyes, the condition is referred to as argyrosis.

In our Internet searches for cases of argyria we have found many divergent claims about both how much colloidal silver had been consumed and the time period over which this had occurred. For years, stories circulated about the “blue man” who was said to have consumed a homemade preparation that made his skin turn blue. Here is the backstory: In 2008, Paul Karason, a man living in California, began exhibiting symptoms of argyria. His consumption of immoderately high, almost toxic doses of silver salts and proteins (not colloidal silver) caused his skin to become permanently blue. Karason made his own silver mixture using a salt solution and an extended-length electrolytic process. As this highly toxic mixture accumulated in his body, his skin turned blue. According to his own statements, Karason ingested an extremely high concentration of his silver mixture over a period of years. His dosages, which were both much too high and repeated far too often, vastly exceeded the

requirements of any therapeutic regimen. Because of these unreasonably high doses of silver, Karason became one of the few confirmed cases of argyria in the West. (He died in 2013 at the age of sixty-two, of a stroke following a heart attack.) His story demonstrates both the rarity and the improbability of developing argyria.

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Taking Colloidal Silver during Pregnancy

We are sometimes asked about the safety of using colloidal silver during pregnancy and while breast-feeding. While we cannot answer this question with absolute certainty, we have not heard of any definitively negative reports during the past ten years, nor do we have any such experience. We have recommended the use of a 25-ppm solution even when a woman is pregnant or lactating, although we have also suggested that the woman ingest the colloidal silver only as long as is absolutely necessary. In fact, as a general rule, colloidal silver is an agent that should only be used when symptoms are evident. It is not for prophylactic use.

Contraindications

To date, we have little actual direct experience with and know of no physiological mechanisms that would justify the use of colloidal silver as a treatment for blood diseases, problems with bone growth, afflictions of the heart muscle and circulatory system, nervous complaints and neurological diseases, paralysis and spastic cramps,

congenital defects, sensory disorders, brain and memory disorders, and psychosomatic and psychological ailments.

It is of interest that the therapeutic uses to which colloidal silver has been put during the last few years have brought with them an increasing number of positive outcomes in cases of illnesses that are not considered to be among those for which silver is normally used, e.g., depression, asthma, allergies, and even cancer. While a number of case studies are now known to us (see chapter 3 for summaries of some of the myriad published studies), these must still be examined so that the precise circumstances under which certain results were obtained are verified.

CONDITIONS AND THEIR TREATMENTS

The following compendium lists most of the common ailments that can be treated with colloidal silver. The symbol refers to dangerous and acute illnesses, including those illnesses that should be reported to one's physician and/or to public-health agencies, for which medical attention is essential.

DIGESTIVE DISORDERS

Diarrhea

This is a condition in which a person has three or more successive bowel movements in which the stool is runny, unformed, pasty, or watery. It is caused by bacterial infection; the consumption of food that is irritating, indigestible, or allergy-inducing; or as a result of food poisoning, parasites, inflammation, or even a tumor.

Symptoms: The insufficiently solidified stool may be mixed with mucous, pus, or blood. The condition is often associated with spasmodic pains, and in severe cases can lead to other serious threats to health. Diarrhea can persist chronically for an extended period of time or reoccur in intervals.

Use: Ingest 2 to 3 tablespoons (30 to 50 ml) of a 25-ppm solution three times daily.

Case study: Male, two years old. Child's diarrhea was alleviated by giving him 1 teaspoon (5 ml) of a 25-ppm silver solution hourly, diluted with an equal part of distilled water.

Flatulence—Meteorism, Tympanites

Flatulence is the result of an excessive accumulation in the gastrointestinal tract of the gases produced by the digestive processes of fermentation and decomposition, causing the expulsion of these gases through the anus.

Symptoms: Often associated with abdominal distension, elevated diaphragm, rumblings in the abdomen, sensations of fullness, and the sudden release of often unpleasant smelling gas (farting); may occur in conjunction with cramps or colicky pain

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution three times daily.

Gallbladder/Bile Duct Infection/Obstruction—Cholangitis, Cholecystitis

Cholangitis is an inflammation of the gallbladder and/or bile ducts due to a bacterial infection, usually ascending from the intestine, less frequently from the liver via the bloodstream. In most cases it tends to occur as a result of partial obstruction by gallstones, however, there are other causes, such as benign stricturing, various tumors, and anaerobic organisms such as *Clostridium* and *Bacteroides*.

Parasites that may infect the liver and bile ducts may also cause cholangitis; these include the roundworm *Ascaris lumbricoides* and the liver flukes *Clonorchis sinensis*, *Opisthorchis viverrini*, and *Opisthorchis felinus*. Cholangitis is a serious medical condition, not to be trifled with.

Symptoms: Sudden and sometimes intermittent fever or chills, mild jaundice (a yellow discoloration of the skin and the whites of the eyes), local pain and pressure sensitivity below the right arch of the ribs that radiates to the area between the shoulder blades, vomiting, and a distinct sense of malaise. A chronic condition includes feelings of pressure and tension in the right upper abdomen, lack of appetite, morning nausea, flatulence, and an inability to digest fatty foods; stools are foul-smelling, pale, and foamy.

Use: Ingest 2 to 3 tablespoons (8 to 10 ml) of a 25-ppm solution two to three times daily.

Case study: Female, sixty-three years of age. A diagnosed, painful inflammation without colic showed improvement after ingesting 5 teaspoons (20 ml) of a 25-ppm solution three times daily for over two weeks, after which all symptoms of pain subsided.

Gastritis—Inflammation of the Stomach Lining

Gastritis is an inflamed alteration of the mucosa that line the stomach, which may be acutely aggravated by excessive consumption of alcohol, smoking, or from the side effects of various medications. In chronic conditions it may be triggered by an autoimmune deficiency or through exposure to *Helicobacter pylori* bacteria.

Symptoms: Sudden onset, usually after consuming alcohol or spicy food; accompanied by acidic burps, flatulence, a sensation of pressure or cramps in the upper abdomen, a stale taste in the mouth, tongue coating, halitosis, vomiting, nausea, bloating, and occasionally diarrhea; may also be associated with dizziness

Use: Ingest 2 to 3 tablespoons (8 to 10 ml) of a 25-ppm solution twice daily or (preferably) sip a half to three-quarters of a cup (100 to 150 ml) of a 3 to 5-ppm solution throughout the day.

Case study: Male, thirty-nine years of age. Symptoms of chronic gastritis that had persisted for over five years improved after just two days of ingesting 5 teaspoons (20 ml) of a 25-ppm solution twice daily; the condition disappeared entirely after the colloidal silver had been taken consistently for a period of twelve weeks.

Halitosis—Bad Breath

Bad breath results when volatile sulfur compounds become mixed in with exhaled air as one breathes out. Halitosis can be due to conditions in the oral cavity or the nasopharynx, or may have systemic causes. Local causes include poor oral hygiene, poor dental health, consumption of alcohol and cigarettes, infections of the oral mucosa and/or gums, dry mouth, periodontitis, other infections of the mouth (e.g., thrush), infections in the nasopharyngeal space, and malignant tumors. Systematic causes can include diabetes mellitus, diabetic coma, kidney insufficiencies, cirrhosis of the liver, hepatic coma, esophageal diverticulum, food and other dietary items (garlic, alcohol). Starvation or dehydration can also cause bad breath, as can medications containing sulfur compounds.

Use: Twice daily, rinse the mouth and gargle with 4 teaspoons (20 ml) of a 10 to 15–ppm solution for at least one minute; also ingest 2 teaspoons (10 ml) of a 25-ppm solution twice daily.

Case study: Male, forty-one years of age. An unpleasant case of halitosis that had persisted for months disappeared after three days of using 4 teaspoons (20 ml) of a 25-ppm solution twice daily.

Irritable Bowel Syndrome (IBS)—Spastic Colon

Irritable bowel syndrome is a symptom-based diagnosis for a chronic inflammation that rarely affects the entire colon but usually only the terminal portion. Its onset may be sudden, and the condition may last for years and has no definitively identified organic cause. It may

occur after an infection or as the result of a stressful life event; the most common theory is that it is a disorder of the interaction between the brain and the gastrointestinal tract. For at least some people, abnormalities in the gut flora occur, and it has been theorized that these abnormalities result in inflammation and altered bowel function.

Symptoms: Frequent emptying of the bowels with mucous-laden stools, leading to loss of appetite, weight loss, weakness, and often cramps in the calf muscles; symptoms appear intermittently, so that symptom-free periods alternate with coliclike bouts of pain

Use: Ingest 2 to 3 tablespoons (8 to 10 ml) of a 25-ppm solution twice daily or sip a half a cup (100 ml) of a 25 to 30-ppm solution throughout the day.

Small Intestine Inflammation—Enteritis

Enteritis is an inflammatory infection of the mucosa of the small intestine caused by bacteria, viruses, fungi, or parasites.

Symptoms: Foul-smelling diarrhea, sudden spasmodic abdominal pains, flatulence, vomiting, and mild fever; often with a lack of appetite, nausea, distaste for food, or bloating

Use: Sip between a half and three-quarters of a cup (100 to 150 ml) of a 25 to 30–ppm solution throughout the day.

Case study: Male, fifty-four years of age. Following a six-week regimen of ingesting 3 tablespoons (50 ml) of a 10-ppm solution five times daily, the inflammation exhibited signs of improvement; this was followed by another two weeks of ingesting 4 teaspoons (20 ml) of a 25-ppm solution three times daily, until the condition disappeared.

EYE AILMENTS

Conjunctivitis —Pink Eye

This is an inflammation of the conjunctiva, often involving the margins of the eyelids as well, as a result of an infection or allergy.

Symptoms: A reddening of the eyes, typically with an increase of serous fluid and often with a discharge of pus, causing the eyelids to stick together; lower lids may exhibit swelling and increased tearing; may be associated with increased photosensitivity up to and including a complete desire to avoid light (photophobia), itchiness, a burning sensation around the eyes, and a feeling as if a foreign body is present, sometimes with distinct pain

Use: Ingest 1 to 2 tablespoons of a 25-ppm solution two to three times daily; also instill several drops of a 25-ppm solution into each eye, or rinse out the eyes with up to 1 teaspoon of a 25-ppm solution several times daily.

Case study: Female, thirty-eight years of age. A case of conjunctivitis that had been present for two months showed improvement within four days of instilling a solution of 25-ppm

colloidal silver into the eye with an eyedropper three times daily.

Stye—Hordeolum

This involves an inflammation of the sweat and sebaceous glands in the margins of the eyelids, usually leading to a discharge of pus, most often caused by a staphylococcal, and less often by a streptococcal, infection. Infections occurring in the outer margins of the eyelid involve the glands of Zeis, the small sebaceous glands surrounding the follicles of eyelashes, and the meibomian glands, on the posterior margin of each eyelid.

Symptoms: A rapidly developing inflammation, with painful, purulent swelling and localized redness, only infrequently associated with fever; conjunctiva may also show signs of swelling and reddening; infections occurring in deeper regions may cause the margin of the eyelid to arch outward; infrequently can lead to such complications as abscesses in the eyelid or the spread of the inflammation over the entire eye

Use: Instill several drops of a 25-ppm solution onto the lower eyelids three times daily and ingest 2 teaspoons (10 ml) of a 25-ppm solution twice daily.

Case study: Male, eleven years of age. For three years, he had been suffering from a recurring stye on his right eye, which

often persisted for days. Following a recurrence, he began taking colloidal silver; on the second day of using colloidal silver the stye was already markedly reduced in size and all pain was gone; by the third day, all signs of abnormality had disappeared.

Tired Eyes

This is a condition in which the eyes feel fatigued but there are no other complaints. Common causes can include looking at a computer screen or other electronic device (such as a smartphone) for extended periods of time, working in artificial light, driving, or drowsiness.

Symptoms: Irritation of the conjunctiva, leading to redness, mild pain, a light burning and dryness of the eyes, often in combination with blurred vision and temporary difficulties in focusing (especially when reading); commonly associated with heavy eyelids, feelings of tiredness, and a sense of pressure around the eyes (symptoms that are often improved by simply closing the eyelids)

Use: At least twice daily, but especially at night, instill several drops of a 25-ppm solution into each eye, or rinse out the eyes with up to 1 teaspoon of a 25-ppm solution.

MOUTH AND RESPIRATORY AILMENTS

Asthma

This is a chronic, inflammatory illness of the respiratory tract that typically first manifests during childhood. An acute asthma attack can result in difficulties in breathing and can even be fatal. Allergic asthma is the result of a genetic disposition and external stimuli (i.e., the presence of allergens). Hay fever can also move into the lower respiratory tract, leading to asthma. Nonallergic asthma can be caused by infections (usually of the respiratory tract), adverse reactions to medications, toxic or irritating substances (solvents, fabric softeners, chemical additives), and overexercise/exertion. Bronchial obstruction may be caused by one or more of the following: increased mucous secretion, contraction of the smooth muscles lining the bronchial passages, and the formation of edema in the bronchial membranes. A number of stimuli can increase the sensitivity of the respiratory passages and the inflammatory conditions that may result.

Symptoms: Shortness of breath, tightness of chest, wheezing, excessive coughing or a cough that keeps you awake at night

Use: Ingest 2 to 4 teaspoons (10 to 20 ml) of a 25-ppm solution twice daily; may also be used to treat acute asthma attacks.

Case study: Female, forty-two years of age. By drinking a cup containing a 25-ppm solution at the first sign of an impending attack, she was usually able to avoid more serious symptoms.

Bronchitis

This is an acute inflammation of the bronchial mucosa, usually due to a bacterial infection of the upper respiratory tract, less frequently because of the presence of fungi or a viral infection.

Symptoms: Usually begins with an increase in watery mucous secretions that then thicken and turn white or opaque, followed by a more viscous purulent yellow phlegm; commonly associated with a mostly dry, painful cough, a burning sensation in the chest, and fatigue for no apparent reason. In the beginning, body temperature may increase slightly, and shivering is common; as the condition progresses, moderate to severe fever, as high as 104 °F (40 °C), may result. Bronchitis that persists for six months or more and is characterized by coughing and the production of sputum is referred to as chronic bronchitis. The initial stages may be relatively asymptomatic, with the only signs being coughing (a symptom to which the person may have become accustomed), a slight elevation of body temperature, and mild sensations of malaise. In later stages, severe fits of coughing, especially in the morning, may produce a sputum that is mucoid, opaque, and

thick. As the condition progresses, breathing may become more difficult, first following exertion, and then even while resting.

Use: Ingest at least 2 to 3 tablespoons of a 25-ppm solution twice daily.

Case study: Female, fifty-two years of age, was successfully treated for a case of bronchitis recurring over a period of several months by regularly taking a shot glass full of a 25-ppm solution twice daily.

Canker Sores—Aphthous Stomatitis

A canker sore is a painful, inflamed area of the mucous membranes of the gums, oral cavity, or tongue. When a number of these appear simultaneously, the condition is referred to as aphthous stomatitis. Canker sores can occur as a result of injuries to the oral mucosa, when the body's immune system has been challenged; as an autoimmune reaction; as a result of food allergies or intolerances; as a result of deficiencies of vitamins (such as B12), iron, or folic acid; due to the presence of intestinal fungi; or as a side effect of taking a medication.

Symptoms: Small, white spots in the mouth with distinct margins, usually occurring alone, although in some cases the entire oral cavity may be filled with canker sores with a

diameter of 3 cm or larger; can make both speaking and eating painful; even swallowing liquids or saliva can be uncomfortable; in severe cases, daily activities may be profoundly impacted

Use: Rinse the oral cavity thoroughly with 2 teaspoons (10 ml) of a 25-ppm solution three times daily and ingest 2 teaspoons of a 15 to 25-ppm solution twice daily.

Case study: Male, nine years of age. Following four treatments, the symptoms almost entirely disappeared, while the pain subsided after the first mouth wash.

Common Cold

A cold is a general term applied to a variety of febrile viral diseases involving congestion of the upper respiratory tract.

Symptoms: Sniffling, increased mucous secretion of the nose (runny nose) with a reddening of the nostrils, sore throat, hoarseness and coughing, phlegm production, an obvious impairment of well-being, and feelings of fatigue, headache, and mild fever

Use: Drink 1 tablespoon of a 25 to 30-ppm solution twice daily; gargle separately the same amount. Instill several drops of a 50-

ppm solution into the eyes as needed.

Case study: Female, thirty-two years of age. After gargling with a 25-ppm solution one evening, her symptoms disappeared by the time she woke up the following morning.

Cough—Tussis

A protective reflex in which the air in the lungs is explosively evacuated in order to free the bronchial tubes and lungs of mucous or an inhaled foreign substance. In the case of allergies, coughing can result from irritation of the respiratory passages. Coughing is also a symptom of asthma, flu, croup, whooping cough, and other childhood illnesses, as well as of tumors of the bronchioles and lungs.

Symptoms: Coughing fits, often in order to eject mucous (“productive cough”) and free the respiratory passages of foreign bodies (such as dust) or mucous

Use: Ingest 2 to 4 tablespoons of a 25-ppm solution several times daily as needed.

Case study: Female, seven years old, experienced rapid improvement followed her third ingestion of 4 teaspoons (20 ml) of a 15-ppm solution.

Case study: Male, twelve years old. A violent, productive cough improved overnight after consistently taking a 25-ppm solution three times daily.

Croup—Laryngitis Subglottica

Croup is an unspecific inflammation of the upper breathing passages in the region of larynx, usually caused by a parainfluenza virus, more rarely by a respiratory syncytial virus (RSV), rhinovirus, or measles virus. It may also be the result of a bacterial infection or an allergic response. It usually affects infants and small children between the ages of six months and six years; in rare cases older children or young adults may also be affected.

Symptoms: A characteristic dry, barky cough, hoarseness, and often wheezy sound during inhalation; in severe cases pronounced difficulties in breathing; mild or medium-grade fever; in acute cases, symptoms often appear in the middle of the night among children who previously exhibited no signs of any health problems

Use: Gargle with 1 tablespoon of a 25-ppm solution twice daily and ingest 2 tablespoons of a 25-ppm solution once daily.

Fever Blisters—Herpes Febrilis, Cold Sores

Fever blisters are small blisters that can appear on and near the lips as a result of an infection by the Herpes simplex virus. Once the initial infection has been brought under control, the blisters will quickly disappear, but the virus will remain latent and may be reactivated by some type of stressor, such as exposure to the sun, menstruation, or fever. The reappearance of the blisters indicates that the immune system is facing some type of challenge.

Use: Twice daily, apply several drops of a 25-ppm solution directly onto the affected area and gently massage into the skin. To strengthen the immune response, also follow a three-week regimen of holding 1 to 2 tablespoons (15 to 45 ml) of a 25-ppm solution in the mouth once each day for as long as possible before swallowing.

Case study: Male, fifty-seven years old. The cold sores had been present on his lips for two days. Daubing gauze that had been impregnated with a 25-ppm solution to the affected area five times while concurrently ingesting 2 teaspoons (10 ml) of a 25-ppm solution caused the blisters to disappear within two days.

Flu—Influenza

Flu is an acute, contagious, epidemically manifesting, and difficult viral infectious disease, often appearing when a person's immune

system has been weakened.

Symptoms: High, sudden fever, often with shivering, profound feelings of malaise, exhaustion, chills, headache, runny nose, coughing and inflammation of the bronchial tubes, and pain in the muscles, limbs, and joints. It is also frequently associated with eye problems, an overall sense of lethargy, and blisters around the lips.

Use: Take into the mouth and hold before swallowing 1 to 2 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution two to three times daily.

Case study: Female, twenty-four years of age. Her flu with fever and headache was treated by taking a 25-ppm solution three times a day. Improvement was noticed after the first day; all symptoms vanished by the fourth day.

Case study: Male, thirty-one years of age. Symptoms of flu with headache and pain in the limbs but with little fever were successfully treated with 4 teaspoons (20 ml) of a 25-ppm solution taken three times daily. Improvement was noticed after one day, while all symptoms were gone after five days, beyond which colloidal silver was ingested for four more days.

Hay Fever—Rhinitis

Hay fever is an allergic reaction of the mucous membranes of the nasal and sinus passages caused by reacting to substances in the air, such as pollen.

Symptoms: A runny nose with clear or opaque secretions (rarely a head cold), with frequent fits of sneezing and often clear and pronounced sensations of itchiness in the nose, impairment of nasal breathing, a redness and swelling of the eyes with increased sensitivity to light, often occurring with headache; sometimes accompanied by an asthmalike attack or a rash with high fever

Use: Gargle with 2 tablespoons (15 to 45 ml) of a 25-ppm solution two to three times daily; also use an eyedropper to instill several drops of a 25-ppm solution into the nose and, if desired, into the eyes.

Case study: Male. By prophylactically ingesting 4 teaspoons (20 ml) three times daily at the beginning of the pollen season, he barely noticed any symptoms of hay fever.

Hoarseness

Hoarseness is a mostly transient irritation of the vocal cords with a loss of voice, usually the result of a cold, laryngitis, or a bacterial infection of the respiratory tract.

Symptoms: A burning or tickling sensation in the throat and pain upon speaking; vocal limitation ranging from a dull and raspy voice to a complete loss of the ability to speak

Use: Gargle with 1 to 2 tablespoons (15 to 45 ml) of a 25-ppm solution, and swallow 2 tablespoons (30 ml) of a 25-ppm solution twice daily.

Case study: Male, thirty-eight years of age. Using a solution of 25-ppm solution for two weeks as indicated above led to a slow but continuous improvement of a sore throat that had been persisting for over a week. Afterward, his voice returned to normal.

Inflammation of the Oral Mucosa—Stomatitis Simplex, Stomatitis Mycotica

This is a noncontagious inflammation of the oral mucosa produced by bacteria, viruses, or fungi.

Symptoms: Painful inflammation with reddening and swelling, bleeding, tongue coating, bad breath, increased production of saliva, and difficulties eating, with a heightened sensitivity to hot, sour, or spicy foods and problems with chewing and swallowing. Stomatitis mycotica manifests as white burning

blisters on the cheeks, tongue, and throat, which may be easily wiped away.

Use: Apply/ingest 2 tablespoons (30 ml) of a 25 to 30–ppm solution as a mouthwash twice daily; also ingest drops of this solution every half hour.

Case study: Male, eighteen years of age. His pain abated after his first use of a 25-ppm solution as a mouthwash; the inflammation disappeared on the second day after multiple mouthwashings, and he was almost completely healed after four days.

Laryngitis—Sore Throat

Laryngitis is an acute or chronic inflammation, usually accompanying an illness of the upper respiratory tract. The term pharyngitis is used when the infection is centered at the back of the throat (pharynx); most cases of sore throat are due to pharyngitis. The term laryngitis is used when the infection is centered around the vocal cords (larynx). Both can be caused by streptococcal (bacterial) infections, less frequently by viral infection, and can also result from the inhalation of certain chemicals, dust, smoke, or overtaxing the voice. In rare cases, the condition can also appear with measles, rubella, or the flu.

Symptoms: An inflamed and reddened throat, a tickling sensation in the throat leading to a dry, barky cough and wheezing sounds during inhalation, slight fever of up to 101.3 °F (38.5 °C), and hoarseness, which can lead to loss of voice; repeated urges to clear one's throat, itchy sensations in the throat, or the sensation that the throat has narrowed or a foreign object is present; pain when swallowing or speaking; headache and swollen lymph nodes in the throat

Use: Gargle with 1 tablespoon (15 ml) of a 25-ppm solution twice daily and ingest 2 tablespoons (30 ml) of a 25-ppm solution once daily.

Case study: Male, twenty-two years of age. After gargling 4 teaspoons (20 ml) of a 25-ppm solution three times a day and orally ingesting the same amount of a 25-ppm solution twice daily, the inflammation disappeared within four days.

Lateral pharyngitis—Angina Lateralis

This is an unusual, acute, and painful form of sore throat caused by a streptococcal bacterial infection that affects the lymph channels of the lateral region of the pharyngeal wall. These run from the upper walls of the pharynx toward the back of the throat. Lateral pharyngitis most commonly occurs in those who have had their tonsils removed.

Symptoms: Sore throat and pain when swallowing, making food intake difficult, reddened throat and gums, earache (because of the proximity to the Eustachian tube), and headache

Use: Gargle with 2 teaspoons (10 ml) of a 25-ppm solution three to four times daily and ingest 2 to 3 teaspoons (10 to 15 ml) of a 25-ppm solution twice daily.

Periodontitis and Gingivitis—Periodontal and Gingival Infection, Pyorrhea

Periodontitis is an inflammation caused by an infection by microorganisms that results in the largely irreversible destruction of the periodontium, the tissues that surround and hold the teeth in place. A persistent inflammation of the gingiva, known as gingivitis, can spread into the maxilla or mandible, the connective tissue (periodontal ligament, alveolar-dental membrane), and the cementum. The bacteria release metabolites that provoke the body's defense reactions. This immune response involves a variety of different enzymes that help to destroy the bacteria but also damage one's own tissues. If this process continues, the connective tissues and bones can be irreversibly harmed.

Symptoms: In the early stages, periodontitis has very few symptoms and little to no pain, and in many cases the disease has progressed significantly before the person seeks treatment. The gums may become red, swollen, and sensitive to the touch; there may be bleeding, a bluish coloration, and the formation of pockets in the gums that may become filled with pus. The

breath may smell foul, the gums recede, and abscesses and abnormal growths may develop, ultimately leading to a loosening and finally a loss of the tooth or teeth. In most cases, this is a chronic, intermittently symptomatic process found primarily in adults.

Use: Swish 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution or 2 tablespoons (30 ml) of a 5 to 10–ppm solution through the mouth and between the teeth twice daily.

Case study: Female, forty-three years of age. After multiple mouthwashings using a glass of a 12-ppm silver solution, the inflammation was noticeably reduced. Subsequently she adopted a regimen of mouthwashing 1.5 tablespoons (22 ml) of a 25-ppm solution every night for two months.

Pneumonia

Pneumonia is an often dangerous, acute, or chronic inflammation of the tissues of the lungs as a result of an infection with pneumococcal or staphylococcal bacteria, less often viruses or fungi.

Symptoms: Severe impairment of the general state of health, with accelerated shallow breathing and shortness of breath and expelling of phlegm; sudden high fever, typically accompanied by chills; in the initial stages, a dry cough with stabbing chest pains that usually appear on just one side and vary as the

person inhales and exhales; in the later stages, cough may produce a rusty red sputum

Use: Ingest 2 tablespoons (30 ml) of a 25-ppm solution two to three times daily, or sip up to half a cup (100 ml) of a 25-ppm solution throughout the day.

Case study: Female, sixty-two years old, with pneumonia, including prominent rales (crackling) in the lungs while breathing. After following the aforementioned regimen she was symptom-free within just two days.

Case study: Male, forty-four years of age. A painful lung infection that had been present for four days was treated with antibiotics (at the attending physician's insistence), and was also treated by ingesting 4 teaspoons (20 ml) of a 25-ppm solution three times daily. The patient showed signs of improvement after three days and was symptom-free two days after this.

Sinusitis—Sinus Infection

Sinusitis is a mostly bacterial, persistent, abscesslike purulent inflammation of the mucous membranes of the sinus cavities, sometimes resulting from an ailment affecting an upper tooth or tooth root.

Symptoms: Sudden onset with a pulsating sensation of pressure pain centered in the area of the affected sinus cavity, which can become more intense when the person bends over; may be accompanied by dizziness, increased sensitivity to light, and fever of up to 104 °F (40 °C); persistent and difficult-to-heal runny nose producing purulent secretions that are thick and yellowish or milky opaque; sensations of heaviness in the head and a general sense of malaise; breathing through the nose becomes difficult and the eyelids may turn red

Use: Place 2 to 3 tablespoons (30 to 45 ml) of a 25-ppm solution into the mouth twice daily and hold it there for as long as possible before swallowing. Drops of a 25-ppm solution can be applied to and rubbed into the affected areas (sinuses, membranes of the mouth, etc.). An effective delivery method involves using an ear syringe and gently squirting the solution up into the sinus passages; it will sting if an infection is present, but if you repeat about ten minutes later the sting will be greatly reduced. Repeat this procedure every two hours until sinuses are clear. You can essentially duplicate this method of rinsing the sinuses by buying a saline mist (in a glass bottle) at the drugstore, emptying out the saline solution, and refilling the bottle with a small amount of colloidal silver, then spraying inside the nasal passages (remove the spray device afterward). You can also use a ceramic neti pot to infuse the sinuses with colloidal solution.

Case study: Female, thirty-nine years old. The hourly instillation of several drops of a 25-ppm solution into the nose completely healed her sinus infection within three days.

Tonsillitis—Pharyngitis

This involves an affliction of the throat and pharyngeal mucosa, accompanied by swollen tonsils, and is commonly produced by a streptococcal infection.

Symptoms: Acute, bright red inflammation of the throat; swollen mucous membranes that may be covered with a thick mucus layer; feelings of dryness in the mouth and a general sense of malaise, with fatigue, difficulties swallowing, throat pain, and fever, often in conjunction with headache or earache

Use: Gargle 1 to 2 tablespoons (15 to 30 ml) of a 25 to 30–ppm solution twice a day, and ingest 2 tablespoons (30 ml) of a 25-ppm solution multiple times daily.

Case study: Male, twenty-eight years of age. His inflammation subsided after two days of following the instructions given above.

Whooping Cough—Pertussis

Whooping cough is a highly infectious acute bacterial illness of the respiratory tract, most commonly occurring in childhood.

Symptoms: Typically violent, staccato fits of coughing, usually during the night, often with up to a half minute of apnea; great difficulties in breathing and a mild fever of under 100.4 °F (38 °C); coughing expels a thick mucous and is frequently accompanied by vomiting; face may swell up and acquire a bluish tint, and the conjunctiva may show signs of bleeding. The coughing fits can appear more serious than they actually are, although in small children and infants whooping cough can lead to paroxysms and unconsciousness.

Use: 1 to 2 tablespoons (15 to 45 ml) of a 50-ppm solution two to three times daily, or sip up to half a cup (100 ml) of a 25 to 30-ppm solution throughout the day.

Case study: Male, seven years of age. His persistent, painful cough had been present for three weeks but showed significant improvement after taking 4 teaspoons (20 ml) of a 15-ppm solution twice daily for eight days. After an additional four days, the boy was virtually symptom free.

SKIN CONDITIONS

Abscess

A purulent inclusion of pathogens located under the skin that is known as an abscess may or may not be associated with swelling, and is usually the result of a staphylococcal, streptococcal, or E. coli infection. The purulent material typically drains from the abscess when it bursts, or it may empty through a fistula.

Symptoms: An inflamed area of soft tissue filled with pus, often indicated by redness in the affected area and fever; when large and untreated, can lead to blood poisoning (sepsis)

Use: Apply several drops of a 25 to 50–ppm solution locally and gently rub into the affected area two to three times daily without exerting pressure. Also ingest 2 to 4 tablespoons (30 to 60 ml) daily.

Case study: Female, age twenty-six. A purulent inflammation of the skin was treated with cotton gauze impregnated with colloidal silver, and healing occurred within two days.

Acne—Acne Vulgaris

Acne refers to purulent inflammations of the epidermal sebaceous glands and hair follicles. These may be the result of an allergic reaction; hormonal and psychological factors may also play a part. It most frequently appears in adolescents (mostly males) during the time between the onset of puberty and about twenty-five years of age. The severity of acne varies widely between individuals, with most cases disappearing after puberty.

Symptoms: Pimples and pustules that may appear anywhere on the face, neck, back, and chest, and are filled with a yellowish pus; in severe cases, or when the affected areas itch and are scratched, other skin problems may result, which can lead to scarring

Use: Apply several drops of a 25-ppm solution to the affected area three times daily, and without applying pressure, gently massage into the skin. In addition, take 1 tablespoon (15 ml) of a 25-ppm solution into the mouth and hold it there as long as possible before swallowing.

Case study: Male, fifteen years old. A two-week period of treatment during which the skin was swabbed daily with a 25-ppm solution resulted in a short-term improvement of his acne symptoms; his acne did not disappear entirely until he made adjustments to his dietary intake.

Bed Sores—Decubitus

Bed sores result when the skin or mucous membranes are damaged as a consequence of prolonged pressure being placed on a specific area, leading to a reduced or complete obstruction of blood flow to the tissue. Bed sores are a type of pressure ulcer. People who are bed-bound must have their position in bed adjusted on a regular basis so that no single area of the body is subjected to pressure for an extended period; if not, bed sores will result. In addition, the normal process of wound healing can be adversely affected by poor nutrition, protein deficiencies, dehydration as a result of too little fluid intake, decreased range of motion, diabetes, circulatory problems, infection, edema, and hematomas.

Use: Wash out the entire area of the open wound at least once daily by instilling 1 tablespoon (15 ml) of a 25 to 30–ppm solution onto the wound; also ingest 2 tablespoons (30 ml) of a 25 to 30–ppm solution daily.

Case study: Female, seventy-three years old, bed-bound. Her skin exhibited a bed sore that clearly showed improved granulation after being rinsed with 4 teaspoons (20 ml) of a 25-ppm solution twice daily for one week.

Boil—Furuncle

A boil is a painful, hard inflammation of a hair follicle on the skin that expands into the surrounding tissues, and is caused by a staphylococcal or streptococcal infection.

Symptoms: A reddening of the skin surrounding a central purulent core, which may be accompanied by such serious general symptoms as fatigue, fever, and swelling of the regional lymph nodes

Use: Locally apply several drops of a 25 to 50–ppm solution twice daily. For more benefit, adhere a compress impregnated with a 10 to 30–ppm solution and ingest 2 tablespoons (30 ml) of a 10 to 15–ppm solution twice daily.

Case study: In the case of boils, successful treatment involves a longer regimen of ingesting 4 teaspoons (20 ml) of a 25-ppm solution twice daily for four weeks and externally applying a bandage impregnated with a 25-ppm solution. Using the solution for a shorter period of time can lead to a recurrence of the symptoms.

Burn—Combustico

A burn involves painful tissue damage as a result of exposure to fire, hot objects, hot gases or liquids, friction, sunlight, electrical current,

ultraviolet radiation, or x-rays.

Symptoms: Depending on its severity, a burn is classified into one of four degrees; only the first three levels are treatable:

First degree: painful, reddened skin with swelling but without blistering, which abates after only a few days

Second degree: very painful; reddened skin with blisters that fill with a proteinaceous fluid, and when they burst, scarring may result

Third degree: swelling and the formation of blisters; large-scale skin destruction with the development of a black crust; no pain

Fourth degree: deep tissue destruction that extends into muscle and bone

The complications of burns include water, electrolyte, and protein loss and a thickening of the blood, compromised immunity, generalized shock, and kidney failure.

Use: Apply up to 2 tablespoons (30 ml) of a 25 to 30–ppm solution to the burn site several times daily, or cover with an impregnated bandage.

Case study: Female, twenty-two years of age. Burns on her underarm caused by coming into contact with a hot oven completely healed within three days.

Case study: Female, forty-one years of age. Her hand had been burned by touching a hot iron; the burn was immediately treated with a 25-ppm silver solution, and the pain disappeared very soon thereafter.

Cradle Cap—Crusta Lactea

Cradle cap is a white, flaky form of eczema appearing in newborns or infants, in which old skin cells remain attached to the skin instead of shedding. Of uncertain origin, it may be due to intolerance of cow's milk or fruit, or be a residual effect of maternal hormones affecting sebaceous glands in the child's skin.

Symptoms: Small, scaly red, white, or yellow spots and crusts, rarely with blisters, primarily occurring on the scalp; may be itchy but is usually not; scratching may cause the blisters to ooze fluid

Use: Apply several drops of a 25-ppm solution locally two to three times daily.

Case study: Male, two years old. Massaging a 25-ppm solution into his scalp and giving him 1 teaspoon (5 ml) of the same solution once daily improved his condition.

Cuts and Abrasions

A cut is an injury of the skin caused by a sharp-edged object, such as a knife or scissors (also known as an incision). The margins of the wound are smooth, and the two sides of the wound often separate from each other. Bleeding may be profuse. Such wounds rarely develop infections. An abrasion is an injury of the topmost layer of the skin (epidermis) due to the skin being laterally ripped or torn, such as by sliding across a rough surface (also known as a scrape). Typically associated with only a little bleeding, lymphatic fluid may ooze from the wound's surface, and there may be substantial pain. With deeper abrasions, droplets of blood may exit the wound at various points.

Use: To treat cuts, instill several drops or up to 1 teaspoon (10 ml) of a 25 to 30-ppm solution into the opening of the wound two to three times daily; for abrasions, apply several drops of a 25 to 30-ppm solution and gently massage this into the entire affected area.

Case study: Female, sixty-three years old, suffered a deep cut wound of her finger from a kitchen knife. The wound was immediately flushed with a solution of 25-ppm silver, and a firm pressure bandage was applied over the site. From time to time, additional drops of the solution were dribbled onto the

bandage. The pain from the wound immediately subsided, and the wound itself completely healed after eight days. The resulting scar was barely visible.

Case study: Female, twenty-eight years of age. After suffering an abrasion as a result of a fall, a 25-ppm solution was instilled onto the wound and bandaged over. The skin regenerated itself very rapidly.

Dandruff—Pityriasis Capitis

Dandruff is a chronic condition of the scalp in which the dead cells at the top of the epidermal layer are shed at an abnormally rapid rate; this results in often visible flakes comprised of dead cells and protein complexes. The condition is usually the result of overly dry skin or an infectious disease whose symptoms affected the skin, or due to overly productive sebaceous glands.

Use: Two to three times daily, gently massage 2 to 3 tablespoons (30 to 45 ml) of a 10 to 25-ppm solution into the scalp. Additionally ingesting 2 tablespoons (30 ml) of a 25-ppm solution twice daily appears to augment the beneficial effects.

Case study: Male, sixty-one years of age. His severe dandruff was successfully treated by externally applying 2 teaspoons (10 ml) of a 25-ppm solution to the scalp, and ingesting 4 teaspoons (20 ml) of the same 25-ppm solution once daily.

Eczema—Dermatitis

This is a general term for an acute or chronic surface inflammation of the skin that can cause the skin to change. Although caused by various infectious agents, eczema is not contagious.

Symptoms: The affected areas, which often itch intensely, may redden, become moist, form small papules and vesicles, and sometimes exhibit swelling. After the vesicles burst open, these dry out and develop a crust and a keratinous layer. The overstimulation of the nerves that eczema may cause can lead to psycho-vegetative disturbances. In chronic eczema, there is pronounced scale formation with dry skin, excessive keratinization, and cracks in the skin, but without signs of inflammation.

Use: Apply several drops of a 25-ppm solution locally two to three times daily to the affected area and, without applying pressure, gently massage into the skin. An alternative method is to impregnate gauze with the solution and bandage or tape it in place. In addition, ingest 2 tablespoons (30 ml) of a 25-ppm solution several times a day.

Erysipelas—St. Anthony's Fire

Erysipelas, from the Greek, meaning “red skin,” is an acute infection of the upper dermis and lymphatics caused by a hemolytic streptococcal bacterial infection. It is often the result of a minor skin injury, and most commonly occurs on the face, arms, or legs, and less frequently around the navel. Fat tissue is most susceptible to infection.

Symptoms: The onset of erysipelas is usually marked by sudden fever and chills. Some hours later, the affected area turns deep red as the characteristic graduated, flamelike, and well-demarcated rash develops. Although the rash is not elevated in the initial stages, the area subsequently swells and becomes warmer. The symptoms can range from small red dots with no attendant indications to a highly febrile infection with chills and serious sequelae. Blisters seldom form, but when they do they may bleed. Erysipelas has a tendency to resolve itself spontaneously; however, if not treated, the condition may recur and lead to disruptions in the lymphatic drainage in an arm or leg or to thrombophlebitis (the inflammation of a vein due to a blood clot). When it appears on the face, it can cause cerebral venous thrombosis and meningitis.

Use: Apply 2 teaspoons (10 ml) of a 25 to 30–ppm solution to the entire affected skin area at least twice daily; in addition, ingest 2 to 3 tablespoons (30 to 45 ml) of a 25 to 30–ppm solution daily.

Frostbite—Congelatio

Frostbite is an acute, painful condition caused by exposure of the skin to extreme cold. This exposure may be slow and continuous, such as during the winter in high mountains, by spending too much time in a cooler or freezer, or by sudden contact with extremely cold objects. Most instances of frostbite involve the extremities such as the ears, nose, fingers, or toes.

Symptoms: Depending on the extent of skin damage, frostbite is classified into one of four degrees (same as burns); only the first three levels can be treated:

First degree: painful, pronounced reddening of the skin, but without the formation of blisters (frostnip)

Second degree: painful, pronounced reddening of the skin with the formation of blisters

Third degree: destruction of the skin and the development of a black crust over the affected areas

Fourth degree: occurs when the skin and underlying tissues freeze solid; a black crust will develop over the affected areas

Use: Apply and distribute up to 10 drops of a 25-ppm solution over the skin several times throughout the day. Do not apply to any areas of the skin that still feel cold to the touch. In cases of

fourth-degree frostbite, also ingest 1 to 2 tablespoons (15 to 30 ml) of a 25-ppm solution.

Fungal Infection—Mycosis

Fungal infections of the skin consist of an infection (such as that caused by *Candida* yeasts) in warm/moist areas of the skin or mucous membranes as well as in the toenails, resulting from circulatory problems, poor nutrition, immune weaknesses, metabolic disorders, or as the side-effects of certain drugs.

Symptoms: The affected area may exhibit reddening and severe itchiness. Among women, fungal infections in the genital area may cause sensations of burning and itchiness in the vaginal region, and the labia may swell and turn slightly red, while the vaginal discharge is white and creamy. In persons with compromised immune systems, the fungus may also become established in the mucous membranes of the mouth, stomach, intestine, and lungs, and the resulting conditions can be serious.

Note: There is no such thing as a harmless fungal infection. Every fungal illness must be thoroughly treated in order to prevent it from spreading to other organs or recurring. Treating a fungal infection requires a long period of treatment that should be continued for at least six days after all of the external symptoms have subsided.

Use: For skin infections, ingest 1 tablespoon (15 ml) of a 25 to 30–ppm solution twice daily and apply locally and repeatedly throughout the day. For fungal infections of the digestive tract, ingest 4 to 6 teaspoons (20 to 30 ml) of a 10 to 25–ppm solution twice daily. For fungal infestations of the finger-or toenails, soak the affected regions in a 20 to 30–ppm solution every day for several weeks.

Case study: Female, fifty-three years of age. A few days after visiting a sauna, she began to experience itching between her toes. The itchiness disappeared after two days of applying a 25-ppm solution. The best results were achieved by ingesting 2 teaspoons (10 ml) of a 25-ppm solution twice daily for an additional two weeks.

Gangrene—Tissue Necrosis (death)

Gangrene is the death or decay of an organ or tissue due to a lack of blood supply, often due to a bacterial infection of the skin that has been damaged due to mechanical trauma or excessive heat or cold, or to degenerative changes as a result of chronic conditions like diabetes mellitus.

Symptoms: In dry gangrene, the affected tissues initially turn pale and cold. This is at first associated with feelings of numbness, later with severe pain. As the tissue dies, it dries out and turns reddish black, and the necrotic tissue may detach from the body within a matter of weeks. However, if the affected tissue is infected with additional bacteria, then circulation may

be impaired in such a way that the blood remains in the area, providing a fertile ground for bacterial growth. The area will become soft and filled with fluid, with liquefaction of the necrotic tissue and the emitting of a foul, putrid odor.

Use: Twice daily instill drops of a 50-ppm solution over the entire affected area; also ingest 1 to 2 tablespoons (15 to 30 ml) of a 25-ppm solution twice daily.

Case study: Female, sixty-eight years of age. Wet, fetid gangrene, well advanced, dried out following a one-week course of instilling the affected area with a 25-ppm solution.

Hemorrhoids

This painful condition involves an expansion of the vascular vessels in or around the anus. Hemorrhoids, which can occur both internally and externally, can be the result of a congenital weakness of the connective tissue, poor nutrition, lack of exercise, excessive pressure on the area (such as caused by childbirth), and aging. Internal hemorrhoids cannot be seen from the outside, but may be pushed out of the anus due to strain or during a bowel movement. External hemorrhoids are visible from outside the body and are distinguishable from the skin that surrounds them because they appear as bluish red lumps.

Symptoms: Soft, hard, or bulging lumps that may grow as large as 1 to 2 centimeters in size. Straining the abdominal muscles or coughing may cause a hemorrhoid to increase in size or can lead to its initial appearance. A light red blood (fresh blood) may appear during a bowel movement. Pain can increase during a bowel movement, and there may be sensations of itchiness and wetness or burning, with a feeling of increased tension in the anal region, as well as constipation. In advanced conditions, the lumps can become larger and may exhibit signs of considerable spontaneous bleeding.

Use: Locally apply several drops of a 25-ppm solution twice daily and take a shallow sitz bath in a 3 to 5-ppm solution (or better yet, a 10 to 15-ppm solution) in the evening.

Hives—Urticaria

Hives are an exaggerated or diminished reaction (oversensitivity) of the skin or mucous membranes to specific “normal” stimuli such as certain foods, plants, insect bites or stings, animal hair, medications, chemical substances, or even sunlight. They may also be caused by congenital factors.

Symptoms: May appear immediately and on a massive scale, or days after exposure to the stimulus; sensations of extreme itchiness and prickling of the skin, with the affected areas showing signs of reddening, swelling, and the development of wheals; these may have irregular borders and can spread over much of the body

Use: Twice daily, ingest 2 tablespoons (30 ml) of a 25-ppm solution and apply several drops of a 25 to 50-ppm solution to the affected sites.

Case study: Male, twenty-one years of age. After adhering to a three-month regimen of ingesting 2 teaspoons (10 ml) of a 25-ppm solution three times daily, the allergic reactions that appeared on his skin were significantly reduced during the following months.

Impetigo

This is a highly infectious bacterial skin condition that most commonly occurs in newborns and children and primarily affects the face and extremities. The open, purulent sites of the skin remain infectious until they heal. Small-blister impetigo is caused by infection with streptococcal bacteria.

Symptoms: Initially, small-blister impetigo manifests as an itchy red rash that develops into small thin-walled blisters filled with fluid or pus. When these burst or are scratched open they liberate bacteria that can infect other sites or be transmitted to others. When they dry out, they develop a honey-colored crust; once these detach, the site will begin to weep fluid once more and new crusts can form. In rare cases, the pathogens may infiltrate into deeper skin layers, resulting in inflammations of the nail bed or nail fold. Approximately 5 percent of persons

with this condition may experience an inflammatory reaction of the kidneys (glomerulonephritis); although this can be serious, it usually heals with no after-effects.

Use: Using cotton balls impregnated with a 25-ppm solution, treat the affected areas three times daily; also ingest 2 teaspoons (10 ml) of a 25-ppm solution twice daily.

Insect Bites and Stings

Insect bites and stings can provoke a variety of reactions, even lethal shock in some people. Some stings and bites may transmit an additional infection that can cause serious illness, such as West Nile virus (a mosquito-borne virus), Lyme disease (transmitted by ticks carrying the bacterium *Borrelia burgdorferi*), or malaria (the product of a parasitic plasmodium).

Symptoms: A reddening of the bite/sting site, which may be followed by itchiness; as the reddened area grows larger, swelling may occur and a blister may develop. If the site of the bite or sting becomes infected, fever and joint pains may result. Allergic reactions to bites or stings can result in local or generalized swelling; if this occurs in the respiratory tract, a person may experience difficulties breathing.

Use: As needed, apply several drops of a 25-ppm solution to the affected area multiple times daily. In the case of an allergic

reaction, ingest 2 tablespoons (30 ml) of a 25-ppm solution at least two times in succession. To treat serious symptoms, ingest a half a cup (100 ml) of a 12 to 25-ppm solution by sipping this over the course of one hour.

Case study: Female, sixty-two years of age. Colloidal silver was applied to the site immediately after being stung; no swelling occurred.

Case study: Male, nineteen years old. Immediately after being bitten by a mosquito, several drops of a 25-ppm silver solution were instilled onto the site, and in addition he ingested two glasses containing 4 teaspoons (20 ml) each of the same solution. No swelling resulted.

Itchiness (see also: Neurodermatitis)—Pruritus

Itchiness is an annoying sensation that occurs only on the skin, which may be temporarily alleviated by scratching. Its cause can be widely varied: as the result of a kidney or liver disease, circulatory problems, diabetes, an infectious disease, hemorrhoids, a condition that causes the skin to become dry, a rash, poisoning, an allergic reaction, a skin fungus, or simple aging of the skin.

Symptoms: Itchiness all over the skin, which may become worse when a person is warm; often associated with sleep disturbances. When the itchiness becomes unbearable, the

person may even ignore or accept the bloody scratches they are inflicting on themselves, as the pain of the wounds seems more tolerable than the itching sensation itself.

Use: In cases of skin damage, apply several drops of a 25 to 30–ppm solution to the affected area two to three times daily and gently massage into the skin without applying pressure.

Case study: Female, forty-nine years old. A case of chronic itchiness that could not be attributed to a specific cause was successfully treated by regularly rubbing the skin with a washcloth saturated with a 25-ppm solution, along with the daily ingestion of a 25-ppm solution. Her symptoms improved within just a few days and completely disappeared after four weeks.

Case study: Female, fifty-two years of age. An occurrence of chronic itchiness that persisted for three weeks improved following a two-week treatment of a daily ingestion of 4 teaspoons (20 ml) of a 25-ppm solution.

Leg Ulcers, Open Sores—Ulcus Cruris Venosum

Leg ulcers consist of a destruction of the tissue thought to result from the improper functioning of venous valves (less often from arterial influence), leading to an increase in blood pressure in the surrounding area. The fluid (and the proteins and other substances)

that accumulate in the lower legs trigger the condition. The impaired flow of blood inhibits healing, leading to the formation of an ulcer.

Symptoms: Discoloration of the surrounding skin; open wounds that may be shallow or deep but are not painful; ulcers may become moist and fester; when occurring in deeper layers, there may be pain, and the skin may break down and become necrotic and caseous (a cheesy-looking dead-cell mass)

Use: Several times daily, instill between several drops and up to 1 tablespoon (15 ml) of a 25 to 50–ppm solution onto the ulcer; also apply and gently massage into the area of intact skin surrounding the wound. In addition, ingest 1 to 2 tablespoons (15 to 30 ml) of a 25 to 30–ppm solution.*3

Case study: Female, sixty-seven years of age. For three weeks, and repeatedly throughout the day, 4 teaspoons (20 ml) of a 25-ppm solution were instilled onto a deep ulcer on the lower leg that had resisted healing; as a result, a cohesive layer eventually developed over the wound granulation.

Neurodermatitis

This is a skin condition characterized by recurring cycles of itching and scratching the same area of skin, possibly leading to the skin in the affected area becoming thick and scaly. Although allergic as well as metabolic factors can trigger such itching, the root cause appears

to be genetic. Dietary changes can often improve the condition, while environmental challenges may worsen it.

Symptoms: A typically symmetrical skin rash that can develop on the insides of the elbows and knees, on the neck, throat, and face, and on the backs of the hands and feet. The skin reddens, becomes dry, taut, marginally swollen, and unbearably itchy. The feelings of itchiness become more pronounced when the person is in a warm bed. The intolerable itching leads to scratching, which can then cause the rash to exude fluid. Excessive scratching can damage the skin, resulting in bleeding.

Use: Three times daily, apply up to 10 drops of a 25-ppm solution locally over the entire affected area and additionally ingest 2 to 3 tablespoons (30 to 45 ml) of a 5 to 10-ppm solution.

Case study: Male, thirty-seven years old. His itching and rash showed improvement after he regularly massaged a 25-ppm solution into the affected areas once each day and additionally ingested 4 teaspoons (20 ml) of a 25-ppm solution three times daily.

Orofacial Herpes—Herpes Labialis

This is a viral condition caused by herpes virus in which painful blisters may develop on the lips, around the mouth, and on the transitional mucosa. Similar to fever blisters (see: Fever Blisters), these blisters typically appear when a person's immune defenses are challenged.

Symptoms: Clusters of blisters filled with a serous fluid content; these typically become encrusted after only a few days and heal without scarring; may be made worse by exposure to sunlight; surrounding skin swells up and is painful to the touch; larger outbreaks of blisters may be associated with fatigue, fever, and swelling of the lymph nodes

Use: Twice daily, apply several drops of a 25 to 50-ppm solution locally, and additionally ingest 1 to 2 tablespoons (15 to 30 ml) of a 25-ppm solution. As well, rub drops of a 25 to 30-ppm solution (or even better, a 50-ppm solution) into the lips.

Case study: Female, twenty-three years of age. Following three days of treatment with a 25-ppm solution, the blisters disappeared. To avoid any recurrence, she continued to treat the areas for another eight days.

Plantar Warts—Verrucae Plantaris

These warts develop on the underside of the toes and the sole of the foot. As the wart develops, spiny or thornlike growths penetrate into

the skin. Plantar warts are caused by coming into direct contact with certain strains of the human papilloma virus. The warts are often covered by a callus.

Symptoms: As the person walks, their own body weight can cause the wart to press against the periosteum, a sensitive membrane that surrounds most bones, causing severe pain.

Use: Apply several drops of a 25 to 50–ppm solution directly onto the plantar wart twice daily, and ingest 4 teaspoons (20 ml) of a 25-ppm solution twice daily.

Case study: Male, thirty-seven years old. Following several weeks of instilling several drops of a 25-ppm solution into a compress and applying this several times a day, his plantar wart completely vanished.

Case study: Male, twenty-seven. A plantar wart that had afflicted this person for several years was successfully treated by ingesting 4 teaspoons (20 ml) of a 25-ppm solution twice daily for eight weeks. Additionally, a compress that had been impregnated with a 25-ppm solution was applied every evening for two hours.

Psoriasis

Psoriasis is a nonthreatening, nonmalignant, but persistent chronic inflammation of the skin that can occur in different forms and degrees of severity. The symptoms usually flare up on a recurring basis.

Symptoms: The area of inflammation is clearly delineated and may have a maplike pattern. Most commonly affected are the knees, elbows, and the scalp, which may become covered with small, waxy, silvery white scales, or hard, often large patches of skin. These do not cause hair loss. After the scales or patches detach, small droplets of blood may appear. Psoriasis often leads to characteristic patterns appearing on the fingernails.

Use: Two to three times daily apply several drops of a 25-ppm solution locally to the affected areas and gently massage into the skin. Additionally ingesting 2 tablespoons (30 ml) of a 25-ppm solution twice daily appears to increase the effectiveness of this treatment.

Case study: Female, sixty-two years of age. A case of psoriasis that flared up repeatedly for several years was successfully treated with a 25-ppm solution of silver. There was an initial inflammation on the left elbow; when this inflammation abated, the psoriasis on the left side disappeared. One week later, the same condition occurred on the right elbow, with the same treatment bringing equally successful results. The woman was subsequently completely symptom-free as a result of regular, consistent use of silver.

Case study: Male, thirty-three years of age. Psoriasis was treated and did not reoccur with the following regimen over a

period of two years: ingesting 2 teaspoons (10 ml) of a 25-ppm solution twice daily for six weeks, followed by a six-week break, then resuming, etc.

Sunburn—Dermatitis Solaris

Sunburn is an acute, painful inflammation of the skin following excessive exposure of sensitive or unprotected skin to ultraviolet radiation.

Symptoms: Light sunburn occurs when, anywhere from one to twenty-four hours after exposure to sunlight, the skin begins to redden (erythema); this may be accompanied by mild swelling as well as sensations of burning and itchiness that persist for some three to four days. Severe sunburn begins as a painful erythema with pronounced burning; painful blisters may form that subsequently peel off. Depending on the severity, the symptoms may range from a general sense of malaise, to fever, nausea, headache, and circulatory collapse.

Use: Apply a 25-ppm solution of colloidal silver over the entire sun burned area as frequently as possible and allow it to take effect.

Case study: Female, twenty-one years old. After experiencing a painful sunburn in which the outer layer of the skin peeled off, a

25-ppm solution was applied repeatedly to the burned areas several times daily; this treatment met with success.

Case study: Female, thirty-five years old. After receiving a sunburn by being out in the high-mountain sun, the woman's skin was treated with a 25-ppm solution. The pain quickly disappeared and the skin regenerated quickly thereafter.

Warts —Veruca

Warts are harmless skin growths with increasing cornification that are triggered by the veruca virus. They can occur anywhere on the body and face.

Symptoms: Sharply delineated, soft, roundish, skin-colored node on skin, often barely visible; may also be thick and dark-colored; can occur in many numbers and can sometimes disappear on their own over time

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25-ppm solution twice daily, and instill drops of a 25 to 50-ppm solution directly onto the warts several times each day.

Case study: Female, twenty-four years old. Several warts on the top of her right hand completely disappeared following one week of the recommended daily care using a 25-ppm solution.

SYSTEMIC ILLNESSES

In today's medicine, the term systemic illness is used to describe diseases that affect the entire organism, such as the blood (leukemia, anemia), the central nervous system, or the entire musculature. Systemic illnesses differ from localized diseases, which only affect one organ or just one part of an organ. In addition, modern biomedicine characterizes an illness as systemic or generalized if it affects the body in a more or less nonspecific manner. Examples of systemic illnesses include diabetes, sarcoidosis, systemic lupus erythematosus, scleroderma, and cystic fibrosis. Systemic illnesses also include all those diseases that can affect the entire organism by disrupting the immune system, such as Epstein-Barr syndrome. In such cases, a wide range of local symptoms may occur, but a treatment can only achieve real success if it takes the entire regulatory system into account.

Because systemic illnesses primarily occur when the body's own regulatory processes break down, the actual "path of infection" is usually secondary. To treat a systemic illness, it is much more important that the body's fluids be regulated, the immune system strengthened, and the body purged of its accumulated toxins. Only after this does it make sense to address the specific symptoms. Colloidal silver offers an effective means of promoting every stage of treatment. The approach that is so often used to today—prescribing antibiotics to alleviate the symptoms—only serves to suppress the manifestation of a disease. In the long run, this can actually make it more difficult to treat, much less cure, a condition such as Lyme disease.

The approach used in alternative medicine, on the other hand, is multiphasic: first alleviate the symptoms so that you can get on with life, while simultaneously supporting the body in its own efforts to restore its equilibrium. Only after this has been largely achieved and one's vitality has returned to its usual level should you begin to detoxify the body and purge it of the poisons and metabolic wastes it has accumulated; otherwise, the increased demands being placed on the body may provoke a new crisis. Carrying out a successful program of detoxification, no matter which method you use, is the best way to ensure the stability of your long-term health. Whatever symptoms remain can then be treated with relative ease. Depending on the specific symptoms that are present in any systemic illness, the dosage should be adjusted during each of the treatment phases, and other appropriate measures should be included in the treatment plan.

Most of the experience we have gained in the last several years in working with people with systemic illnesses has come from treating Lyme disease and multiple sclerosis. We have recently begun to work with those with Epstein-Barr syndrome. We also have some case studies relating to the treatment of cancer.

Fibromyalgia—Chronic Muscle Pain

Fibromyalgia is a still largely unexplained condition associated with widespread chronic muscle pain and a heightened, painful response to pressure. Its exact cause is unknown but the condition is believed to involve psychological, genetic, neurobiological, and/or environmental factors. There is also evidence that certain genetics may increase the risk of developing fibromyalgia.

Symptoms: Pain throughout the entire body, triggered by tactile pressure on the muscles, myolemma (the membranes that enclose muscle fibers), or tendons; chronic fatigue and exhaustion, sleep disturbances, headache, cold hands and feet, hyperhidrosis (excessive sweating), twitching, difficulties in maintaining equilibrium, sensory disturbances such as numbness and tingling, joint pain, increased sensitivity to cold, sometimes with loss of the visual field and blurred vision, anxiety, memory loss and an inability to concentrate, depression, and increased sensitivity to stress.

Use: Ingest 1 to 3 teaspoons (5 to 15 ml)—or preferably 1 to 3 tablespoons (15 to 45 ml)—of a 25 to 30–ppm solution twice daily.

Immunodeficiency—Weakened or Compromised Immune System (Epstein-Barr Syndrome)

This is the state in which the immune system is weak or compromised, owing to any number of causes, and the body's ability to fight infectious disease is either compromised or absent. Immune strengthening, i.e., increasing the functioning of a weak or compromised immune system, improves circulation, affects one's tolerance of temperatures, and accelerates the speed with which white blood cells attack foreign bodies. Many illnesses (i.e., opportunistic diseases) are only able to attack us when our immune systems have been compromised.

Symptoms: Increased susceptibility to infections and fungi, especially in the digestive tract, with reinfections possible after only a short period of time; frequent and recurrent pneumonia, bronchitis, sinus infections, ear infections, meningitis or skin infections; inflammation and infection of internal organs; blood disorders, such as low platelet counts or anemia; delayed growth and development; autoimmune disorders, such as lupus, rheumatoid arthritis or type-1 diabetes.

Use: Ingest 1 tablespoon (15 ml) of a 25 to 30–ppm solution three times daily, or sip a half to three-quarters of a cup (100 to 150 ml) of a 3 to 5–ppm solution throughout the day for four weeks as part of a therapeutic regime.

Lyme Disease—Borreliosis

Lyme disease is a widespread and chronic bacterial disease transmitted primarily through tick bites. The infection is caused by exposure to one of the many types of *Borrelia* bacteria.

Symptoms: Lyme disease exhibits a nonspecific clinical picture that is seldom identified correctly. The incubation period from infection to the onset of symptoms is usually one to two weeks, but can be much shorter (days), or much longer (months to years). A characteristic bull's-eye rash at the site of the bite is often a sign the person has been bitten. After a latent period, heart problems can arise, with skin afflictions and neurological symptoms that may lead to chronic inflammation of the joints and meninges.

Symptoms: The list of symptoms that have been associated with known cases of Lyme disease in the medical literature over the last few years is constantly growing. These include: allergies, Alzheimer's, arthritis, degrees of tiredness ranging from chronic fatigue to the burnout syndrome, depression, diabetes, migraine, muscle degeneration and muscle pain, chronic inflammation, personality changes, sleep disturbances, sight and sensory impairment ranging all the way up to and including complete paralysis. The following organs can be affected: the eyes, abdominal organs, bronchioles, heart, brain, and nerves. Our extensive experience with patients with Lyme disease, including our own personal experience with it, and our successes using colloidal silver and other natural healing methods are discussed in our 2008 book, *Naturheilverfahren bei Borreliose (Natural Treatment Methods for Lyme Disease)*.

Use: In cases of Lyme disease, the treatment plan must be tailored to the specific needs of the person. One basic component, however, is the use of colloidal silver: ingest 1.5 tablespoons (20 ml) of a 50-ppm (or stronger) solution three times daily for one to two weeks; then 1.5 tablespoons (20 ml) of a 25-ppm solution three times daily for one to two weeks; finally, 1.5 tablespoons (20 ml) of a 25-ppm solution twice daily for at least three months and up to twelve months. The quantity of colloidal silver involved and the length of time over which this should be taken, and especially because treating the neurological symptoms of Lyme disease requires it, the colloidal silver should be very fresh. For this reason it is recommended that you purchase your own device for producing colloidal silver. Depending on the specific symptoms that are present, the dosage should be adjusted during each of the treatment phases, and other appropriate measures should be included in the treatment plan. Again, for those with access to German translation, we suggest you consult our book

Naturheilverfahren bei Borreliose (Natural Treatment Methods for Lyme Disease).

Case study: Male, fifty-three years old. Lyme disease was affecting his ability to speak; this showed substantial improvement within just the first four weeks of ingesting 1.5 tablespoons (22 ml) of a 25-ppm solution twice daily.

UROGENITAL CONDITIONS

Benign Prostatic Hyperplasia (BPH)—Enlarged Prostate, Adenofibromyomatous Hyperplasia

BPH is a benign growth of the prostate that usually develops in men over the age of fifty. As the prostate enlarges, it may exert pressure on the urethra and consequently make it difficult to urinate.

Symptoms: Urinary hesitancy, increased urinary urgency (frequently at night) with the passing of only small amounts of urine; decreased flow of urine, often making it difficult or impossible to completely empty the bladder; sensations of pain, burning, and irritation while urinating, with blood sometimes present in the urine; frequently leads to urinary incontinence, in which urine more or less continuously trickles from the urethra

Use: Ingest 2 to 3 tablespoons (30 to 45 ml) of a 25 to 30–ppm solution three times daily.

Case study: Male, sixty-seven years old. As a side benefit of treating Lyme disease (see: Lyme Disease) with 5 teaspoons (20 ml) of a 25-ppm solution three times daily, his need to interrupt his sleep at night because of an urge to urinate disappeared.

Cystitis—Bladder Infection

Cystitis is an inflammation of the bladder caused by an ascending infection of *E. coli*, staphylococcal, streptococcal, gonococcal, or mycoplasma bacteria, or by the trichomoniasis protozoa. Because the urethra of a woman is significantly shorter than that of a man, women are far more likely to develop bladder infections. Such an infection may be facilitated by cold feet or soaking in a hot tub. Because a bladder infection can spread throughout the renal pelvis, cystitis should always be taken seriously.

Symptoms: Cystitis first manifests as an increasing urge to urinate, especially during the night, with burning and pain during urination that becomes more intense as the bladder empties. The urge to urinate may continue even after the bladder has been emptied. The urine is cloudy; in more severe cases, a person may experience fever and chills, and there may be pus and blood in the urine. The condition is often accompanied by such general symptoms as headache, a coating on the tongue, circles around the eyes, fatigue, and nausea. A chronic bladder infection is a persistent condition in which the same symptoms reoccur, sometimes without any other feelings of discomfort.

Use: Ingest 1 to 2 tablespoons (15 to 30 ml) of a 25-ppm (even better, a 50-ppm) solution three times daily. Ideally, the person should also sip about a cup (200 ml) of a 3 to 5-ppm solution over the course of the day.

Case study: Female, twenty-two years of age. A painful bladder infection disappeared after ingesting one half of an egg cup containing a 25-ppm solution three times daily.

Leukorrhea

This is a disorder in the genital region of a woman that can be caused by a variety of pathogens, including bacteria, protozoa, fungi, or worms, but may also accompany an infection of the fallopian tubes, vagina, or the urethra. It can also be the result of an estrogen imbalance.

Symptoms: A milky white or yellowish, thick to watery discharge of the vagina that may be produced by different conditions; may be accompanied by itchiness or blood mixed into the discharge, and often with a general sense of malaise or pain; condition can sometimes lead to a vaginal infection

Use: Rinse the vagina and surrounding area with 4 to 6 teaspoons (20 to 30 ml) of a 25-ppm solution two to three times daily. Also ingest 1 to 2 tablespoons (15 to 30 ml) of a 25 to 30-ppm solution twice daily.

Case study: Female, thirty-two years old. After rinsing with a 10-ppm solution of colloidal silver several times daily, the

discharge improved, although it did not completely disappear until after ten days of following this protocol.

Ovarian Inflammation, Fallopian Tube Inflammation — Oophoritis, Salpingitis, Pelvic Inflammatory Disease

This is an ascending inflammation of the ovaries or fallopian tubes from the vagina, primarily occurring among young women. It is the result of an infection of gonococcal, streptococcal, staphylococcal, enterococcal, mycoplasma, or chlamydia bacteria, or by tubercles.

Symptoms: Abrupt painful spasms and cramps in the lower abdomen, with the pain often radiating to the small of the back; irregular, extended, or more pronounced menstrual bleeding and the discharge of secretions and pus; often accompanied by sudden high fever, occasionally with chills, vomiting, and nausea, dizziness, stomach pains, and an involuntary tensing of the lower abdominal musculature

Use: Ingest up to 3 tablespoons (45 ml) of a 25 to 30–ppm solution (or higher) twice daily until symptoms disappear, and then for eight days thereafter.

Renal Pelvic Infection—Glomerulonephritis, Pyelonephritis

This is a usually acute ascending infection of the renal pelvis most commonly triggered by E. coli, staphylococcal, streptococcal, gonococcal, or mycoplasma bacteria, or by the trichomoniasis protozoa. It often develops following a bladder infection, and may be provoked by being in the cold or as a result of urinary retention (ischuria).

Symptoms: Loss of appetite, fever and chills, herpes labialis, severe lower back pain, pain or pressure in the area of the kidneys, which are sensitive to touch. The tongue develops a dry coating, and the urine is cloudy and flocculent. In severe cases, the ability to urinate can become impaired or even cease entirely. In the morning, the face, and especially the eyes, may appear swollen. Chronic infections are characterized by less severe symptoms, isolated incidents of fever, and painful urination.

Use: Ingest 2 to 3 tablespoons (30 to 45 ml) of a 25-ppm solution twice daily, or (preferably) sip half a cup (100 ml) of a 25 to 30-ppm solution throughout the day.

Urethral Inflammation—Urethritis

Urethritis is an infection of the mucous membranes of the urethra caused by E. coli, staphylococcal, streptococcal, chlamydia, or mycoplasma bacteria, or by the candida fungus or the trichomoniasis protozoa. It usually occurs in combination with other infections of the urinary tract, the prostate, or after a bladder examination, and more

rarely as an allergic reaction in the genital area (primarily among women).

Symptoms: Pale yellow skin, itchiness, sensations of bladder pressure with pain radiating through the groin, frequent urge to urinate, burning pain during urination, and a mucous or purulent discharge; only infrequently accompanied by high fever

Use: Ingest 1 to 2 tablespoons (15 to 20 ml) of a 25-ppm solution three times daily; in addition, rub several drops locally into the lower abdomen and rinse out the vagina with 1 to 2 teaspoons (5 to 10 ml) of a 5 to 10-ppm solution twice daily.

OTHER CONDITIONS

Arthritis—Joint Inflammation

Arthritis is an often-recurring inflammation of the joints that can occur in a dry or exudative manner. The most common form of arthritis is osteoarthritis (degenerative joint disease), a result of trauma to the joint, infection of the joint, or simply age. Other forms are rheumatoid arthritis, psoriatic arthritis, and related autoimmune diseases. Septic arthritis is caused by joint infection.

Symptoms: Affected joints are usually swollen and painful, and their mobility is impaired (at least in the morning); they less often exhibit signs of reddening or warmth. Chronic conditions can lead to a deformation and contracting of the affected joint and a corresponding loss of function.

Use: Ingest 1 tablespoon (15 ml) of a 25 to 30–ppm solution twice daily. Also apply and gently massage into the affected joint anywhere from a few drops up to 2 tablespoons (30 ml) of a 25 to 30–ppm solution (the solution can also be sprayed onto the skin if preferred).

Case study: Female, forty-eight years of age. After ingesting 4 teaspoons (20 ml) of a 25-ppm solution three times daily for four weeks, the inflammation in her hip joint improved.

Burn-Out

Burn-out is a condition of constant fatigue with feelings of inner emptiness and mental exhaustion, which persists for at least six months. The affliction has not yet been clearly defined and may appear in conjunction with a variety of symptoms. Numerous factors can play a role in its appearance and manifestations.

Symptoms: Reduced productivity, hopelessness, apathy, and depression; physical ailments ranging from headache and sleep disturbances to various types of pain and difficulties with digestion.

Use: Ingest 1 to 2 tablespoons (15 to 30 ml) of a 25 to 30-ppm solution twice daily.

Chickenpox—Varicella

Chickenpox is a contagious infection caused by exposure to the Varicella zoster virus. Primarily a childhood disease, its most typical

symptom is its characteristic skin rash that forms small, itchy blisters.

Symptoms: Initial symptoms include headache, joint and limb pains, mild fever, and swelling of the lymph nodes; the characteristic rash rapidly develops on the trunk, scalp, and face, and may later spread to the extremities and the mucous membranes. The rash begins as small nodes that develop into blisters that contain a clear fluid and that itch intensely. These blisters later dry out and scab over. In persons with a healthy immune system the disease is generally nonthreatening and has no after-effects. However, the Varicella zoster virus will remain dormant in the body and may later in adulthood cause shingles (see: Shingles)

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution twice daily, and apply or spray on several drops of a 25-ppm solution two to three times daily.

Case study: Male, ten years old. A recurring flare-up of neurodermatitis that was not immediately diagnosed as chickenpox was treated by massaging a 25-ppm silver solution onto the entire body multiple times. In addition, 2 teaspoons (10 ml) of a 12.5-ppm solution was ingested three times daily for five days.

Exhaustion

Exhaustion can be caused by overexertion or insufficient recuperation or recovery time, leading to the complete depletion of the energy and resources at one's disposal.

Symptoms: Severely reduced efficiency of one's musculature and psychological processes.

Use: Ingest 2 tablespoons (30 ml) of a 25 to 30–ppm solution twice daily.

Case study: Female: After taking 2 tablespoons (20 ml) of a 25-ppm silver colloid solution twice daily for two months as treatment for rheumatism, she noticed a distinct improvement in her previous state of exhaustion.

Fever

Fever is a change in the body's normal thermoregulatory processes resulting in increased body temperatures (over 101.3 °F, or 38.5 °C), as measured with an anal or oral thermometer. There is not a single agreed-on upper limit for normal temperature, with sources using values between 99.5 and 100.9 °F (37.5 and 38.3 °C). Fever can be caused by a bacterial or viral infection. Fever is not a disease, but rather a symptom, and is therefore an indicator of some type of ailment. In children, fevers of less than 102.2 °F (39 °C) that occur in the absence of cramping is a tolerable condition from which the

parents suffer more than the child. In contrast, a temperature of over 107.6 °F (42 °C) represents an acute threat to life.

Symptoms: Racing pulse, accelerated breathing, chills followed by sensations of heat and outbreaks of sweating, reddened skin, thirst, loss of appetite and decreased vigor; may be accompanied by pain in the joints and muscles as well as headache. Signs of fever in infants and small children include irritability, crying, eating disturbances, ear rubbing, and coughing.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25-ppm solution two to three times daily and gargle it before swallowing. Also apply several drops to the chest and massage in gently. Adults may ingest up to 3 tablespoons (45 ml) of a 25 to 30-ppm solution; a better method is to sip a half a cup (100 ml) of a 25 to 30-ppm solution throughout the day.

Case study: Male, forty-nine years of age. A high fever with no apparent cause improved after the third dose of a 25-ppm solution and completely subsided the following morning.

Case study: Female, nine years old. A sudden high fever that reached 103.1 °F (39.5 °C) decreased to 100.04 °F (37.8 °C) after three 4-teaspoon (20 ml) doses of a 25-ppm solution, and subsided to normal after three additional doses.

Food Allergies

A food allergy reaction can result from consuming allergy-triggering foods or beverages, food coloring, flavor enhancers, or preservatives.

Symptoms: Initially, feelings of warmth accompanied by an outbreak of cold sweats, itchiness, nausea, and vomiting; more severe allergic reactions can provoke a massive release of histamines within seconds or up to an hour after contact with the allergen. The resulting anaphylactic shock may affect multiple organ systems simultaneously, wherein the cardiovascular system, the respiratory apparatus, the gastrointestinal tract, and the skin are most commonly affected.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution twice daily. In addition, apply several drops externally once a day and massage into the skin.

Hemorrhage—Bleeding, Hemostasis

Hemorrhage is an escape of blood from the circulatory vessels and its stoppage, resulting from internal or external damage to arteries or veins, and more rarely from organs or tumors.

Symptoms: Visible bleeding, with blanching of the face; in cases of internal or continuous bleeding, the person may

appear increasingly pale and feel weak and without energy; if untreated, can lead to shock; if located in the digestive tract may cause stool to become black

Use: To treat external injuries, instill or spray several drops of a 25-ppm solution onto the wound.

Hyperthermia—Heat Stroke, Sunstroke, Heliosis

Hyperthermia is a serious, life-threatening condition that occurs when the body, as a result of environmental heat exposure without thermoregulation, reaches a temperature in excess of 105.1 °F (40.6 °C). It can be caused by overexposure of the unprotected head to direct and strong ultraviolet solar radiation, causing irritation to the cerebral meninges, or by overexposure to unventilated spaces, such as a parked car. Treatment requires rapid physical cooling of the body.

Symptoms: Extremely red and very warm head, cool, blanched skin, headache, restlessness, dizziness, nausea; vomiting, high fever, chills, excessive sweating, collapse, seizures.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 50-ppm solution every half hour for several hours.

Lymphangitis—Inflammation of the Lymphatic Vessels and Lymph Nodes, Adenitis

Lymphangitis is an inflammation of the lymphatic vessels and lymph nodes as a result of a bacterial infection, various childhood diseases, leukemia, or the breakdown of a metastasis. The most common cause of lymphangitis in humans is *Streptococcus pyogenes* (Group A strep), although it can also be caused by the fungus *Sporothrix schenckii*.

Symptoms: Swelling with areas of red spots; a red stripelike swelling under the skin, with swelling of nearby lymph nodes.

Use: Ingest 2 to 3 tablespoons (30 to 45 ml) of a 25 to 30-ppm solution two to three times daily, and twice daily locally spray on or rub in (without exerting pressure) several drops of a 50-ppm solution.

Mastitis—Infection of the Mammary Gland

Mastitis is an infection that most commonly results when a breast-feeding woman is exposed to bacteria from a baby's mouth. Cracks or tears around the nipple can allow the bacteria (*S. aureus* most commonly, as well as *S. epidermidis* and streptococci) to enter into the tissues of the mammary glands. The condition may also occur in

nonlactating women (and even men) if the breast has been bruised, squeezed, or otherwise injured (such as through nipple piercing).

Symptoms: Fever, rarely with chills; painful swelling; the breast may feel warm and exhibit a localized reddening. If the lymph nodes in the armpits on the same side become swollen, a hard lump may be felt. Small cracks may develop on the nipples. If the inflammation moves into the milk ducts, a purulent abscess may form.

Use: Apply or spray several drops of a 25-ppm solution once or twice daily; also ingest an additional 2 to 3 tablespoons (30 to 45 ml) of a 25-ppm solution as needed.

Measles—Morbilli, Rubeloa

Measles, the result of infection by the paramyxovirus, is a highly contagious febrile viral disease caused by either direct contact with or airborne exposure (due to sneezing or coughing) to an infected person. Measles most commonly affects children under five years of age.

Note: Rubeloa, an alternative name for measles, is not the same disease as German measles, i.e., rubella (see: Rubella).

Symptoms: Initially manifests as coldlike symptoms, i.e., loss of appetite, lassitude, sore throat, photophobia, red and watery eyes, a puffy face, dry cough, conjunctivitis, and fever, which can climb very high. The typical measles rash begins behind the ears and then spreads to the head and face, across the neck, and then over the entire body. The recurring fever may spike as high as 104 °F (40 °C). Because this fever serves an important role in the healing process, it is best to allow it to run its course. After some two to five days, the fever usually abates and the rash disappears. Small, white squama may develop as the rash recedes; these are temporary. Measles may be the most highly contagious of all human viral diseases, and it is certainly not something to be trifled with or dismissed out of hand. A protracted case of measles can result in serious complications such as joint swelling, inflammations of the middle ear (otitis media), pneumonia, encephalitis (swelling of the brain), and visual impairment.

Use: Small children should ingest 1 tablespoon (15 ml) of a 25-ppm solution twice daily; adults should ingest 2 tablespoons (30 ml) of a 25-ppm solution and instill drops of a 25 to 30-ppm solution onto the affected areas.

Middle Ear Infection—Otitis

This is an inflammatory condition of the middle ear, often associated with pain and difficulty hearing, usually as the result of an ascending infection following an injury to the tympanic membrane (eardrum) or via the Eustachian tubes. The acute form is the result of an infection of the mucosa of the middle ear because of a cold or the like.

Symptoms: Reduced sense of well-being, abrupt and painful earache, sounds in the ears, hearing impairment that can range from difficulties hearing to deafness, high fever; in later stages, discharge from the ear as well as vomiting; chronic infection associated with difficulties hearing, although these may not be pronounced, and a dull sensation in the ear; there may be no discharge or pain; chronic-purulent infection involves a discharge from the ear as a result of a defect of the tympanic membrane; often appears intermittently, usually with pain; as the condition worsens, hearing difficulties may become more pronounced

Use: In some cases, instilling several drops of a 25 to 30–ppm solution into the outer ear can bring the inflammation under control.

Case study: Female, eleven years old. Following her third middle-ear infection in nine months, her hearing worsened. After six days of treatment of her ear with a 25-ppm solution, her infection totally healed.

Motion Sickness—Kinetosis, Sea Sickness, Nausea

Motion sickness (or sea sickness) is a temporary reaction to monotonous vibrating movements, swaying, or spinning, which most commonly occurs on boats, automobiles, buses, trains, and planes.

The resulting disturbance in equilibrium can give one the impression of not standing on solid ground.

Symptoms: Mild forms include loss of appetite, nausea, pale pallor, headache, tiredness, decreased motivation, sweating, and dizziness; moderate forms include nausea, often with vomiting, loss of appetite, marked tiredness, lack of motivation, often with digestive problems or diarrhea; severe forms include malaise, loss of appetite or nausea, often with pronounced vomiting of gastric fluids and bile, aversion to all types of foods, disturbances of coordination, and complete absence of motivation.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30-ppm solution once daily.

Mumps—Epidemic Parotitis

Mumps is an acute and highly contagious disease caused by the mumps virus that most often occurs in children and youth.

Symptoms: Painful, nonpurulent inflammation and swelling of one or both of the parotid glands and other salivary glands, accompanied by characteristic earache and discomfort during chewing and swallowing. After a preliminary stage typified by such prodromal symptoms as loss of appetite, irritability, sore throat, and headache, a fever may develop that can go as high

as 105 °F (40.5 °C), often with chills. The parotid gland swells, becomes painful, and is doughy to the touch. The symptoms usually appear on one side and then expand to the other a few days later. After some five to eight days, the fever drops and the swelling abates.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution two to three times daily, or sip a quarter to a half a cup (50 to 100 ml) of a 3 to 5–ppm solution throughout the day.

Parasites—Worms

A number of different types of parasites, including oxyurids (pinworms), ascarids (roundworms), tapeworms, and others, can infect both children and adults. These typically get into the body when a person consumes food that has been insufficiently cleaned or cooked. Certain parasites can also be airborne. At night, the female parasites exit the anus and lay their eggs in the anal regions.

Symptoms: Pinworm symptoms include itchiness around the anus, sleep disturbances, weight loss, and occasionally inflammation of the intestines or the external genitalia. A mild roundworm infestation produces few signs of discomfort; more serious infestations can result in stomach aches, nausea, malnutrition, and anemia. The different varieties of flatworms (tapeworm) can cause different complaints, including stomachache, diarrhea, and weight loss; white pieces of tapeworm will show up in the stools. Different varieties of tapeworm include *Echinococcus granulosus*, or dog tapeworm,

which affects the lungs and can lead to dry coughing. Another type of tapeworm, Echinococcus multilocularis, can cause serious afflictions, especially since people infected with the parasite may be asymptomatic for many years. These tapeworms attack the liver, resulting in an initial symptom of jaundice. If left untreated, they can completely destroy the liver.

Use: Instill or spray several drops of a 25 to 30–ppm solution onto the anus twice daily for at least fourteen days. To treat roundworms and flatworms, ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution twice daily or sip a half a cup (100 ml) of a 10 to 15–ppm solution throughout the day.

Case study: Female, twelve years of age. Following five days of ingesting 4 teaspoons (20 ml) of a 25-ppm solution three times daily, the tapeworms were eliminated.

Paronychia

This is an infection of the folds of tissue surrounding a fingernail or, less frequently, the toenail, resulting from minor injury, a crack in the nail beds, or nail biting. It may also be caused by staphylococcal or streptococcal bacteria or the fungus *Candida albicans*.

Symptoms: A more or less reddish, swollen region around a nail that is painful and sensitive to the touch. As the infection progresses, pus may form under the skin, and there may be a

pulsating pain that becomes more intense when warmth is applied and less intense when a cool bandage is wrapped around the nail.

Use: Apply several drops of a 25 to 30–ppm solution multiple times daily, or place the affected digit(s) in a water bath containing a 3 to 5–ppm solution (although better results may be obtained with a 25 to 30–ppm solution).

Case study: Female, thirty-nine years of age. Her pain disappeared after just two treatments with a 25-ppm solution, while the inflammation gradually lessened and completely disappeared after four days of treating three times daily.

Regeneration—Reconvalescence

This is a general term to refer to the physical and psychological restoration, regeneration, or revitalization of a person's cells, tissues, or organs and/or their mental faculties, vitality, and emotional state.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution twice daily. As a therapeutic regimen, sip a half to three-quarters of a cup (100 to 150 ml) of a 3 to 5–ppm solution each day for four weeks.

Rheumatism (see: Arthritis)

Rheumatism is a nonspecific term for medical problems affecting the joints and/or connective tissue. The term is still used in colloquial speech and historical contexts, but is no longer used in medical or technical literature; there is no longer any recognized disorder simply called rheumatism. Nevertheless, colloquially it is associated with chronic, inflammatory, and often intermittent systemic affliction of the joints, muscles, and connective tissues, especially the synovial membranes and bursa.

Symptoms: Unspecific symptoms, including loss of appetite, weight loss, being prone to exhaustion, general feebleness, possibly mild fever, a characteristic stiffness and lack of energy in the first thirty minutes after waking up that may persist for hours as the condition worsens. At first, the joint pains are noticed only while moving, but they may subsequently occur even when still; joints may feel warm and are red and swollen.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30–ppm solution once or twice daily, or sip half to three-quarters of a cup (100 to 150 ml) of a 25 to 30–ppm solution throughout the day.

Case study: Female, fifty-one years of age. After ingesting 4 teaspoons (20 ml) of a 25-ppm solution three times daily for three months, her pain was reduced enough that she could decrease her long-term regimen to a twice-daily dose of 4 teaspoons (20 ml) of a 12-ppm solution.

Rubella—German Measles, Three-Day Measles

Caused by the rubella virus and highly contagious (it is spread through the air, through coughing), German measles—not to be confused with measles/rubeloa (see: Measles)—is a febrile disease that commonly occurs in childhood. Usually relatively harmless, with few associated complications, it is best to allow the disease to run its course without administering drugs to suppress the symptoms. Frequently, a child will exhibit a developmental and maturational growth spurt after the disease has abated.

Symptoms: The initial symptoms are flulike and may affect the eyes, with coughing and a swelling of the lymph nodes. This is followed by a pink rash consisting of small spots like those produced by measles. The rash first appears behind the ears and then spreads across the entire body. The lymph nodes on the neck and throat may swell, as may the spleen. There may be a mild, transitory fever. In most cases, there is only a slight sense of being unwell, and the rash disappears after just a few days.

Use: Apply several drops of a 50-ppm solution locally twice daily (or spray this onto the skin); also sip a half cup (100 ml) of a 3 to 5-ppm solution throughout the day.

Scarlet Fever—Scarlatina

Scarlet fever is an acute, highly contagious, dangerous illness caused by an infection by streptococcal bacteria; it occurs most frequently in childhood.

Symptoms: Sudden fever of over 102.2 °F (39 °C), chills, headache, and sore throat, difficulty swallowing, vomiting, loss of appetite, nausea. The tongue appears swollen, dark red, and with a white coating; the oral mucosa are reddened, and the tonsils are inflamed and covered with a yellowish white coating. A scarlet rash consisting of numerous tiny bumps develops on the skin, especially in the armpits, groin, cheeks, and the chin. After the fever breaks, desquamation (peeling) of the skin occurs.

Use: Ingest 2 to 3 tablespoons (30 to 45 ml) of a 25 to 30-ppm solution three times daily, or preferably, sip a half to three-quarters of a cup (100 to 150 ml) of a 25 to 30-ppm solution throughout the day. Also gargle with 1 to 2 tablespoons (15 to 30 ml) of a 25 to 30-ppm solution, and spray several drops of a 25 to 30-ppm solution (or better yet, a 50-ppm solution) onto the areas affected by the rash at least once daily.

Case study: Male, five years of age. The boy's rash and fever showed signs of improvement after he received multiple external applications of a 25-ppm solution, while also ingesting 2 teaspoons (10 ml) of a 12.5-ppm solution three times daily.

Shingles (see also: Chickenpox)—Herpes Zoster

A painful inflammation of the nerves, rarely contagious, as a result of a renewed activation of the Varicella zoster (chickenpox) virus, which may lie dormant in a nerve root for years after initial infection.

Symptoms: Shingles usually begins with sensations of itchiness along a strip of skin on one side of the body. Later, blisters may appear somewhere along this same strip, and there is a general sense of malaise (with or without fever). Because the symptoms occur in a band or strip of skin that lies along the pathway of a nerve, it may appear as a belt of blisters on just one side of the body. The blisters may be filled with a watery, bloody, or purulent fluid; these eventually break open and scab over. The extreme pain along the nerve pathway that is so often associated with shingles usually begins before the blisters appear and may persist for months or even years after these have healed.

Use: Ingest 1 to 3 tablespoons (15 to 45 ml) of a 25 to 30-ppm solution two to three times daily. Also, twice daily instill several drops of a 25-ppm solution directly onto the affected areas and gently rub in; as an alternative, the solution may be sprayed onto the skin.

Case study: Female, eighty-five years of age. A painful outbreak on her face was treated in the following manner: twice daily, an eyedropper was used to instill several drops of a 25-ppm solution directly into the eye, while a compress impregnated with a 25-ppm solution was placed on the affected area. In

addition, 4 teaspoons (20 ml) of a 25-ppm solution was ingested three times daily. The pain disappeared during the first day, and the woman was symptom-free after ten days. A recurrence of shingles one year later was treated in the same manner and disappeared within three days.

Trigeminal Neuralgia—Prosopalgia

This is an intense, usually shooting facial pain caused by irritation of the trigeminal nerve that enervates much of the face. It can be caused by an infection of the sinus cavities in the frontal bone, maxilla, or mandible; by a granuloma in the teeth; by a tumor; or as a result of herpes zoster in the facial area.

Symptoms: A paroxysmal and extremely intense, burning pain that may last for sixty seconds or more, in one or more branches of the facial nerve, with twitching facial musculature; may reoccur after periods of no symptoms.

Use: Apply several drops of a 25 to 30-ppm solution locally twice daily.

Vaccine After-Effects

After receiving a vaccination, after-effects may occur that can be difficult to recognize and are not readily associated with the vaccination. Some infants are administered injections containing vaccines against six or eight different disease-causing agents. These vaccines may contain mercury or aluminum compounds that are not easily excreted from the body, which may have adverse effects on early childhood development.

Symptoms: A loss of trust in the mother, developmental problems, unusual behaviors, and infertility later in life. There has been some discussion of the possibility that many types of immune disturbances may be the result of early childhood vaccinations.

Use: Beginning as soon as possible after receiving a vaccination, ingest 2 teaspoons (10 ml) of a 25 to 30–ppm solution twice daily for three weeks.

TREATING ANIMALS WITH COLLOIDAL SILVER

Just as it can be used in treating a variety of conditions in humans, colloidal silver has multiple applications in veterinary medicine. Colloidal silver is the only agent we use to treat our own animals (a cat, a parrot, and a hedgehog) and those of our friends and neighbors (rabbits, dogs, horses, and goats). We have also compiled numerous reports about how others have successfully treated sick animals with colloidal silver, and many online forums discuss this subject. As well, colloidal silver can be used to maintain the health of most animals, while also providing antiseptic effects.

To date, we have direct experience or have heard about the following animals being treated with colloidal silver: small pets (dogs, cats), birds (canaries, cockatoos, finches, parakeets, parrots), livestock (cattle, goats, horses, ponies, sheep), insects (bees), amphibians (frogs, salamanders), reptiles (iguanas, lizards, snakes), and rodents (chinchillas, guinea pigs, mice and field mice, rabbits, rats).

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Comments on Treating Animals with Colloidal Silver

There are many reports about people who have successfully treated ostriches, deer, llamas, camels, and various wild animals in captivity with colloidal silver. The following comments on treating animals are just a sampling of what we have found on the Internet:

“A dog with gangrene showed a very rapid recovery after being administered colloidal silver internally and externally.”

“A throat infection in a dog disappeared after the dog was treated with silver colloid for three days.”

“Six foals were successfully treated for diarrhea (E. coli) using silver water.”

“A horse with protozoal myelitis had not responded to several attempts at treatment; only after it had been treated with liquid silver for seven days did it show improvement.”

“A mare with a uterine infection tested positive for pathogens even after being treated with antibiotics for one month. Only after a three-day treatment with colloidal silver was she bacteria-free.”

“Despite being given an ointment by a veterinarian, a cat that had suffered a tear in its ear from fighting still had pus in the wound a week later. After being treated with colloidal silver for two days, the wound fully healed.”

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Animals and Conditions

Our own direct experience has shown us that colloidal silver can be effectively used in a relatively problem-free manner to treat the following ailments in animals:

Livestock (cows, horses, goats, etc.): abscesses, chafe, dandruff, eczema, eye infections, hoof problems, mastitis (especially in dairy cows), muzzle injuries, phlegmon, saddle sores, streptococcal infections, various wounds (bite, chronic wounds). When breeding horses, treating the genitalia with colloidal silver before collecting a sample to check whether the mare “took” and has been impregnated generally increases the accuracy of the results.

Dogs and cats: abscesses, bad breath and gingivitis, bite and scratch wounds, dandruff, ear care, colds, toxoplasmosis, eczema, feline acne, skin fungi, fur loss, itching, sore paws, claw problems, tick bites, eye infections and styes, diarrhea, for healing after spaying and neutering

Rodents: eye infections, rhinorrhea (runny nose) and colds; injuries, bite wounds, inflammations of the tear ducts, itching, diarrhea, coughing, chronic rhinorrhea, sore feet, abscesses, sore mouth, skin diseases, skin fungi, and coccidian parasites

Reptiles: injuries and bite wounds

Birds: injuries, feather pecking and itching, diarrhea, abscesses, skin diseases, fungi, psittacosis (parrot disease)

Administering Dosage

For practical reasons, colloidal silver is usually administered to animals in their drinking water, although it is always better to administer it undiluted. This is only possible with pets or small animals. Direct administration to large or wild animals almost always fails. We do not consider mixing colloidal silver into an animal's food to be an optimal method of administration, as the silver rather quickly becomes ineffective. Sometimes, however, this may be the only possibility.

Internal use: Because the clinical picture an animal presents can vary widely for any given problem, the quantity and dosage of colloidal silver must be adjusted to each situation. The dosage itself will depend on the size of the animal (e.g., small songbirds versus larger birds such as chickens) and, of course, on the severity of the affliction. On page 108 we provide some general guidelines.

Amphibians: frogs, salamanders	1 ml of a 15-ppm solution 2X daily
Reptiles: lizards, iguanas, snakes	2 ml of a 15-ppm solution 2X daily
Small birds: canaries, parakeets, cockatoos, parrots, chickens, ducks	2 ml of a 15-ppm solution 2X daily
Rodents: chinchillas, rabbits, guinea pigs, hamsters, rats, mice	5 to 10 ml of a 15-ppm solution 2X daily
Cats, small dogs, rabbits	5 to 10 ml of a 25-ppm solution 2X daily
Large dogs, sheep, goats	30 ml of a 25-ppm solution 2X daily
Ponies, horses, cattle	30 ml of a 25 to 50-ppm solution 2X daily

External use: For external application, we recommend using a 25 to 50–ppm solution, no matter the type or size of the animal in question. Of course, the amount to be used will depend on the size of the affected area. For larger animals, we have found that impregnating gauze or bandages with colloidal silver and then adhering these to the area of the wound is more effective than simply spraying or instilling the solution. When animals are treated in this manner, bites, cracks, abrasions, and burn wounds heal just as well and as quickly as they do in humans.

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How to Administer Colloidal Silver to Animals

Use an aerosol device to spray the solution onto the coat, skin, or feathers.

Apply and affix impregnated dressings onto injured skin, open wounds, or fur.

Clean the skin (including the udders and the insides of the ears) or fur with impregnated dressings.

Use an eyedropper or pipette to instill drops into an open wound or the ears; instill one drop when administering to the eyes.

Use a plastic syringe attached to a silicone tube to spray into the mouth or snout.

In cattle, vaginal application via syringe is easy and unproblematic.

Mix into the food (only if no other method can be used).

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The Use of Silver in Mineral Crystal Healing

Mineralogical stone healing investigates the energetic properties of minerals by applying the currently accepted criteria for mineralogical identification, and then, by using the principle of analogy to associate these with the world of humans, drawing conclusions.

Following this principle of analogy, the three most important factors contributing to the properties of a mineral are:

The process through which it originated, which in the human realm corresponds to the biography, the environmental conditioning, and the life situation of a person

Its crystal system, which relates to the internal structure and the way a person conducts her or his life

Its chemical properties, which are associated with the talents and the abilities of a person to interact and connect with the larger world.

When studying a mineral, one looks for those traits that most clearly distinguish it or are somewhat unusual. In this way, the great mass of unspecific information can be filtered out and priorities can be set for its evaluation. Silver has a special status both as a native element and a noble metal, and because of its outstanding electrical conductivity.

THE MINERALOGICAL PROFILE OF SILVER

Silver is cubic and rarely creates cuboidal, octahedral, distorted, or bent single crystals. It is more frequently found in scales or sheets, and most often in knotty, plumose, wirey, or filiform to arborescent, but also curly or stringy as well as coarse, aggregates.

Mohs hardness: 2.5–3

Density: 9.6–11.5 (pure: 10.49)

Tenacity: malleable, hammerable into thin foils or wires

Fracture: hackly, very ductile

Transparency: opaque

Color: light gray to silvery white, also yellowish brown to black; silvery white when polished

Luster: matte to metallic; highly lustrous when polished, with high reflexivity

Streak: white to yellowish; insoluble in hydrochloric acid, soluble in nitric acid

PROCESSES OF SILVER FORMATION

The Primary Process of Silver Formation

The processes through which minerals crystallize from liquid magma are affected by pressure, heat, and available space, and these are related to the time and rate at which the material cools. As the liquid magma cools, a series of formative phases occur known as the intramagmatic, pegmatitic-pneumatolytic, and hydrothermal formations.

Intramagmatic Formation

Human analogy: During the primary process of formation, the inner world is asserting itself against external conditions.

Primary minerals help people who stand before a new beginning in their life, who are starting a new project, or who want to finish something they have already started. They help to reveal our own aptitudes and talents.

Special characteristics of silver: Silver helps people uphold their life principles. It provides support for substantially refining all types of perception. When a challenge becomes a struggle, silver helps to reduce stress and conveys inner peace.

Pegmatitic-Pneumatolytic Formation

As a result of the enrichment of highly volatile components in magma that has already begun to solidify, at the still-high temperature of 842 to 707 °F (450 to 375 °C), the aggressive vapors may react with the surrounding rocks and create new minerals.

Human analogy: The high reactionability of the aggressive vapors with their surroundings corresponds to an inspired, innovative, somewhat revolutionary mentality. The minerals help the unusual ideas meet with approval and be transformed into reality.

Special characteristics of silver: Silver helps people formulate their thoughts, transform their ideas into reality, and shape things in an appropriate fashion.

Hydrothermal Formation

It is only when the temperatures fall below the relatively cool temperature of 707 °F (375 °C) that water is able to liquefy and form aqueous solutions, from which dissolved materials may crystallize out as minerals.

Human analogy: Of all the primary processes of formation, the absence of extreme influences and the moderate temperature range that characterizes the hydrothermal phase of formation

make this most analogous to the conditions that affect people. The minerals that form during this phase represent balanced temperament and healthy and measured growth.

Special characteristics of silver: Silver exerts more of a sober and sensible influence and balances the mood when dealing with strong emotions. It also exerts a cooling effect on the physical plane.

Secondary Formation Process

Due to the processes of dissolution and sedimentation, the secondary process of formation involves crystalline transformation. This process of formation is shaped by such environmental influences as weathering and more superficial chemical reactions. The resulting substance is the product of precipitation and deposition.

Human analogy: The secondary process of formation is one where that which already exists, whether this be a personality or a project, is confronted with an environment to which it must adapt. In other words, the concrete life situation in which one finds oneself dominates over one's conditioning. Secondary minerals are useful in all of those phases of life in which a person must come to terms with others. These set social intergroup processes in motion, accelerate the process of adjusting, and ease confrontations with the environment. It is precisely when one's upbringing or painful experiences threaten one's development that secondary minerals can help

make the necessary changes that will enable one to adjust to the demands of their situation.

Special characteristics of silver: Silver helps a person recover from the physical or psychological ailments that arise because they have not fully or have incorrectly adapted to the situations in which they find themselves.

CHEMICAL MINERAL CLASS

Silver belongs to the chemical class of native elements. It is interesting that the Nickel-Strunz system, used today to categorize minerals, lists the elements as the first of ten groups, and the metals as the first subgroup among the elements. Because native metals (gold, copper, platinum, and silver) are often found in pure deposits that require little or no refining, humans have long used them for a variety of purposes.

Human analogy: Native elements, especially the group of noble metals, represent the elite or aristocrats in the hierarchical order of minerals. Although it usually stands in the shadows of its more noble cousin gold, silver is a noble metal as well. Metals in general help to unite and unify contrasts and contradictions into a single point of view. The noble metals stand for purity, steadfastness, a focus on fundamentals, and strength of character. They lay claim to a universal and singular authority and strengthen one's own point of view.

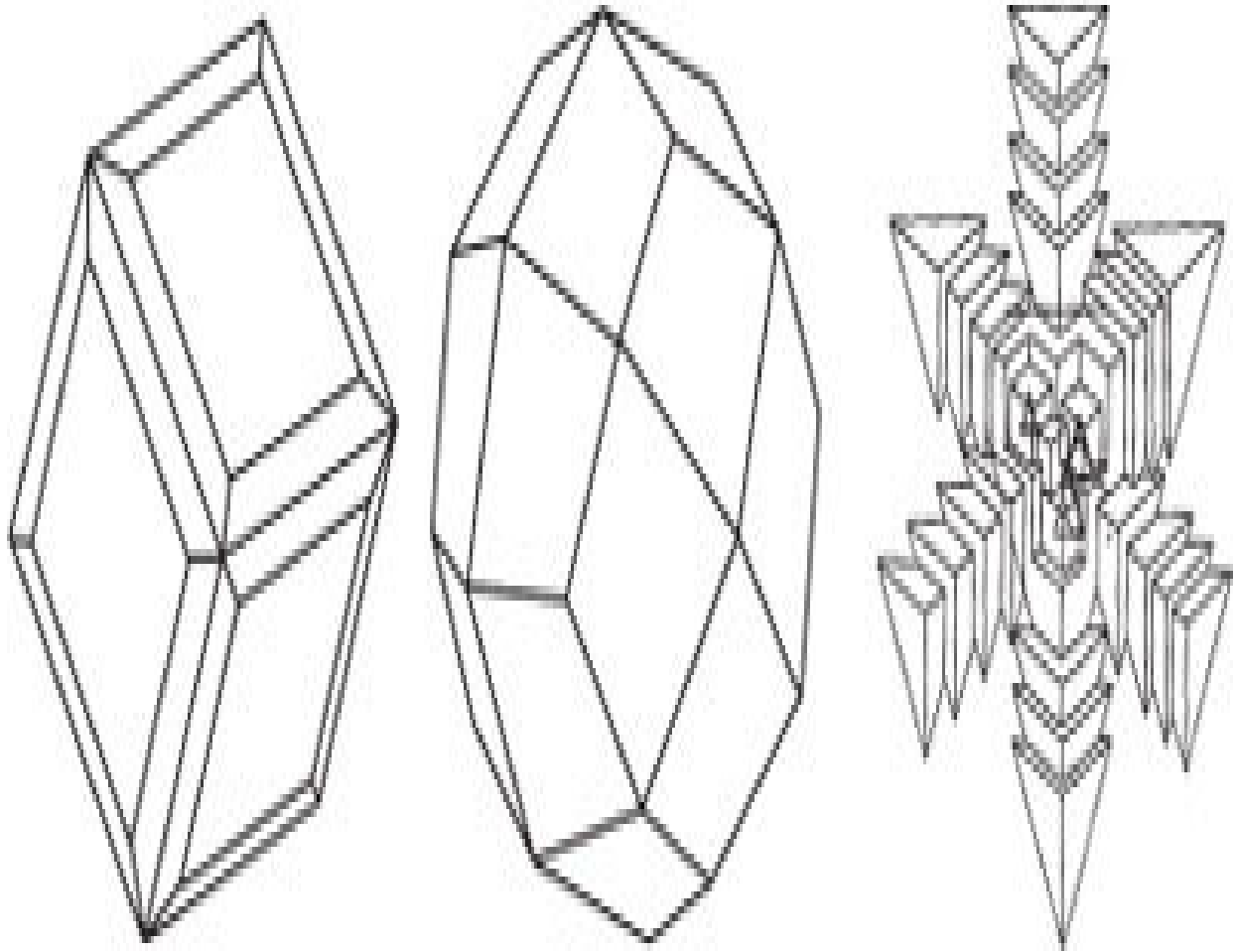


Fig. 6.1. Cubic crystal structures

Special characteristics of silver: Silver expresses the principal of coolness, objectivity, neutrality, modesty, and devotion.

THE CRYSTAL SYSTEM

The crystal system describes the ways in which atoms are arranged within a crystal lattice. All minerals can be classified into one of eight crystal systems: cubic, hexagonal, trigonal (sometimes listed as a subsystem of hexagonal), tetragonal, rhombic, monoclinic, triclinic, and amorphous (i.e., having a random structure, i.e., noncrystalline) (Kühni and Von Holst 2003, 32ff.). Analogously, there are eight structural types that can shape people's attitudes toward life, their emotionality, and their sense of space. Although every person corresponds more or less clearly to a structural type, it is possible to become temporarily acquainted with and simulate the other structures, especially by wearing stones.

Silver exhibits the cubic crystal system, which is based on the form of the square. Of all crystal systems, the cubic system exhibits the highest possible symmetry and is the most solidly arranged. Examples of other cubic minerals include (table) salt, fluorite, pyrite, and garnet.

Human analogy: The cubic structural type is characterized by its enduring stability, an attitude that upholds values, and normative standards. She wants to preserve control, can consistently translate ideas into realities, and loves regularity. She remains true to herself, does not allow herself to be manipulated, and is often a person who feels much and has great depth. Among the negative aspects are an inflexibility in habits and a lack of flexibility or openness to new things. The tendency to hold on to established patterns of thinking and behavior can even lead to self-destruction. Cubic minerals help

to deal with life situations that have become habitual. They promote self-reflection and support the creation of healthy routines, help one to practice a positive, mindful self-control and self-discipline, and support the person who wears them to establish valid guidelines for living their life and to put these guidelines into consistent practice.

Special characteristics of silver: Silver validates these principles, whereby it strives for an order that is not based on power but on the denial of that which is dishonest. By discreetly but consistently exemplifying all that is virtuous, silver exhibits its subtle strength.

QUALITIES

Silver comes from the Old English (Anglo-Saxon) word seolfer. This name is related to the German word silber and the Dutch zilfer. An early Latin name for this mineral was luna which means “moon,” an allusion to its striking, bright luster. When we talk about the qualities of silver, we are referring to its color, luster, tenacity, density, conductivity, and sound.

Color

The color of a mineral speaks directly to the soul, makes the essence of that mineral visible, and is the property of a mineral that most quickly engenders its effects. The color especially influences one's mood and state of mind. According to traditional Chinese medicine (TCM), it is the color that influences the interactions between the organs and the meridians.

Human analogy: Silver-colored minerals subdue heat, accelerate the healing processes, awaken subtle sensations, promote access to the luminous senses, and enhance the sense of aesthetics as well as a selfless spirituality. According to TCM's Five Elements theory, they correspond to the element metal, whose organs are the lungs and colon.

Special characteristics of silver: Silver improves the receptivity of the senses, fosters composure, and cultivates a neutral openness toward those things to which one has a certain distance.

Luster

Untreated silver often has a metallic luster. As a rule, most minerals only shine after they have been polished. In this respect, a metal's luster, which is a product of the smoothness of its surface, may conceal the fact that the substance below the surface is of poor quality. On the other hand, the effort that is required to polish a material will only be worthwhile when one is dealing with good-quality material. Luster is what gives expression to the colorfulness of a mineral.

Human analogy: It is the luster of a mineral that first draws our interest, and thus it corresponds to the character and attractiveness of a person. The first indication that it is time to clean a stone is when it loses its luster, a process that results from energetic exhaustion.

Special characteristics of silver: Silver has a metallic shine, and by its very nature it consequently has a "certain something." Only a little effort is needed to reveal its inner value.

Tenacity

Silver can be easily rolled into thin sheets or drawn out into extremely thin wires. It is ductile but nonelastic and may be cut. A ductile material that is nonelastic remains in its new position after bending. Silver can be melted and vaporized, and in this form it is often applied to smooth surfaces to make, for example, a mirror.

Human analogy: Ductility speaks for an adaptable, patient, modest character who can adapt to the values of others but who shows little resilience and dynamics of his or her own. The process of vaporization (as opposed to the process of rolling) implies a spiritualization like that which is found in a homeopathic potentiation.

Special characteristics of silver: Silver can appear to withdraw itself entirely so that it can adapt itself neutrally and selflessly to the impression or the encounter. The aptness of using silver as a mirror is highly symbolic.

Density

Silver's density is 10.5, less dense than gold (19.4), platinum (approximately 22.4), and lead (11.3). This comparison shows that silver is one of the heaviest metals with a high specific gravity.

Human analogy: The denser a material, the more capable it is to ground, center, and collect the person who wears it. The state of

mind is inclined to be serious and conscientious, and the sense of duty is high.

Special characteristics of silver: Silver strengthens the inner values and promotes consistency; it helps to see things more realistically and to successfully deal with life.

Electrical Conductivity

Of all the metals, silver exhibits the greatest electrical conductivity, even at high voltages. In this regard, it exceeds both copper and gold.

Human analogy: The positive influence that the silver-wearing person can have on communication and perceptiveness, including that which can facilitate intuition, extrasensory perception, and empathy, is ostensibly a result of silver's outstanding ability to allow electrons to flow.

Special characteristics of silver: Silver promotes spiritual receptivity and mediumship. On the cellular level, the electrical conductivity is enhanced and improved by the wearer.

Thermal Conductivity

Silver has the highest thermal conductivity of all the metals. The thermal conductivity of gold is only 70 percent that of silver.

Human analogy: Because of its great capacity to conduct heat, silver is capable of conveying sentiment, warmth, and sympathy. Depending on the context, it may aid people to open themselves up or to close themselves down.

Special characteristics of silver: Silver is especially noted for persons who have strong biological reactions to the withdrawal of love, for example, by developing flulike infections.

Sound

Silver is the metal with the best acoustic properties. Of all the metals, it is the best at reproducing frequencies, and has a bright, clear, long-sustaining sound.

Human analogy: The ear opens itself to the high spiritual quality of silver, because such a pure tone testifies to the highest mental integrity. All religions use sounds to effect a refinement and mental preparation for the spiritual. Sound awakens and soothe the emotions; it overcomes separation and produces harmonic connections. A healthy body can harmonize with its environment, and because it is able to resonate with vibrations, it is also able to enter into relationships.



Fig. 6.2. A silver toning bowl

Special characteristics of silver: Silver's sound quality of clarity and lucidity are expressions of personal integrity, transparency, and openness.

SILVER FOR SPIRITUAL EVOLUTION

Both as a result of our own experiences with silver in its many forms and uses, and from our knowledge of the research that has been conducted to date, we are convinced that silver, whether used in colloidal or other form, can play an important role in the spiritual evolution of people in our present times, because it is a substance that is able to enter into a direct relationship with the vital powers of life.

There are various aspects of silver that indicate that it possesses special abilities to substantially improve the connection and communication between the body and the spirit. On the spiritual level, the lunar quality of silver enhances empathy and facilitates telepathic perception. Silver teaches from its entire being how to have a natural and healthy relationship with everything that surrounds us and with our own nature. It promotes modesty and stillness as well as the moderation and strength that can enable us to serve others.

Astrologically, many different cultures have associated silver with the moon and gold with the sun. The reasons for this go beyond the colors that each reflects. Just as the moon reflects the light of the sun, the reflective properties of silver are used in mirrors and in photography. And no matter how illuminating such qualities as empathy and sensibility may be, there are other aspects of silver that do not entirely fit with those of the moon. For while the moon stands for moods and changing emotions, silver, when more carefully considered, stands for neutrality, clarity, and reason. Both the moon and silver influence the reproductive organs, the hormones, and

fertility. And it must be added that when making colloidal silver, both the weather and the phase of the moon should be considered, as these factors can affect the finished product.

INSTRUCTIONS FOR MAKING A SILVER MINERAL ESSENCE

Use the following method to prepare your own silver essence. In creating healing essences, materials are not dissolved, but rather the vibrational information of the mineral is simply transferred into water. In contrast to colloidal silver, which functions on the basis of physiological mechanisms, healing-stone essences (like the Bach Flower Remedies), as well as gem and mineral essences, are based on an energetic principle of action.

The Myron method is one of the most sophisticated techniques for making gem and mineral essences. To produce a silver (or other) essence using this method requires approximately sixty days. The following delineates the process involved:

Select typical aggregates of the best quality raw silver in dendritic (branching, treelike) form and physically clean these thoroughly.

Place these raw silver aggregates into a bowl containing small pebbles of hematite/magnetite and allow to energetically discharge for at least an hour.

Charge the raw silver aggregates in moonlight for any eight-hour period during the time between three days before and three days

after the full moon (selecting an eight-hour period when there is no cloud cover).

Now place the raw silver aggregates into a patternless, transparent, neutral glass bowl containing good-quality spring or well water or steam-distilled water and expose them to two hours of intensive morning sunlight (i.e., before noon).

Afterward, charge the silver-infused water under a pyramid for twenty-four hours.

Add double the amount of 42 percent aged organic spirits (such as brandy) and store the mixture under a pyramid for twenty-eight days.

Finally, following the principles established by anthroposophy, gently rhythmize the essences over the next twenty-eight days, i.e., softly move them back and forth for at least ten minutes each day.

At no time should the essence come into contact with any metal.

Using Silver Essence

The Myron healing silver essence, like the Bach Flower remedies, should be consumed two to three times daily (6 to 8 drops in some

water), or you can instill and gently massage 4 to 6 drops into the skin two to three times daily. The silver essence can be used to treat:

Skin: atrophic, inflammatory, or allergic processes of the skin

Mouth: inflammatory illnesses of the oral cavity and tonsils

Digestive tract: stimulation of the digestive enzymes of the pancreas

Endocrine system: balance the hormonal system, improve the chances of conception

Using Silver in Other Healing Modalities

SILVER IN HOMEOPATHY

Homeopathy is a system of medicine that was developed by Samuel Hahnemann (1755–1843). It is based on Hahnemann's doctrine of "like cures like" (*similia similibus curentur*), meaning a substance that causes the symptoms of a disease in healthy people cures similar symptoms in sick people. Hahnemann found that undiluted doses caused reactions, sometimes dangerous ones, so he specified that his homeopathic preparations be at the lowest possible dose. He found that this reduced potency as well as side-effects, but he found that vigorous shaking and striking on an elastic surface, a process he termed *schütteln*, "succussion," nullified this. His explanation for how he arrived at this conclusion is said to have stemmed from the fact that he found preparations subjected to agitation in transit, such as in saddle bags or in a carriage, were actually more potent than those that weren't. Insoluble solids, such as granite, diamond, and platinum, which cannot be so succussed, were to be diluted by grinding them with lactose, a process termed trituration.

Potentiation of Precious Metals through Trituration

All homeopathic products must include evidence to support the safety, efficacy, and quality of a homeopathic medication. According to regulation 6 of the *Homöopathisches ArzneiBuch*, or HAB, which is equivalent to the Homeopathic Pharmacopeia of the United States, HPUS, triturations of solid pharmaceutical raw materials are produced using lactose as the carrier for the substance in the following manner:

The triturations are ground by hand up to and including the fourth dilution, or by machine in a ratio of 1:10 or 1:100. When making a trituration, the amount of time and the intensity of the trituration should be estimated in such a way that at least 80 percent of the particles containing the pharmaceutical raw material in the first decimal and centesimal dilution are less than ten micrometers in size; no particle of the pharmaceutical raw material should be larger than fifty micrometers. The same time and intensity should be used to make all triturations up to and including the fourth decimal and centesimal dilution.

Hand Trituration

The carrier substance of the homeopathic substance, e.g., lactose, is divided into three equal parts. The first part is triturated in a porcelain mortar for a short period of time. After adding the raw substance, it is triturated for six minutes, scraped for four minutes with a porcelain spatula, triturated for a further six minutes, and then scraped again for four more minutes. After this, the second third of the raw material is added, and the same process that was just described is repeated once more. Finally, the remainder of the carrier substance is added and processed in the same way, so that the manufacture of the trituration requires at least one hour of working time. Each of the subsequent dilutions is made in a corresponding manner.

Silver's "Drug Picture"

One of the most important methodological pillars of homeopathic medicine is “proving,” a method that involves the testing of remedies on healthy persons (the word proving derives from the German prüfung, “test”). In this system of testing, healthy subjects are administered dilutions of medications, and all of the physical and psychological changes that then occur during a specific period of time are recorded and listed. Depending on how strongly and how frequently a particular symptom occurs, this is then listed in a revised manual according to its value. In homeopathy, the symptoms of a sick person are compared with the registered repertory of symptoms, and the agent is selected that, when tested on healthy persons, produced the greatest number of symptoms that are present in the patient.

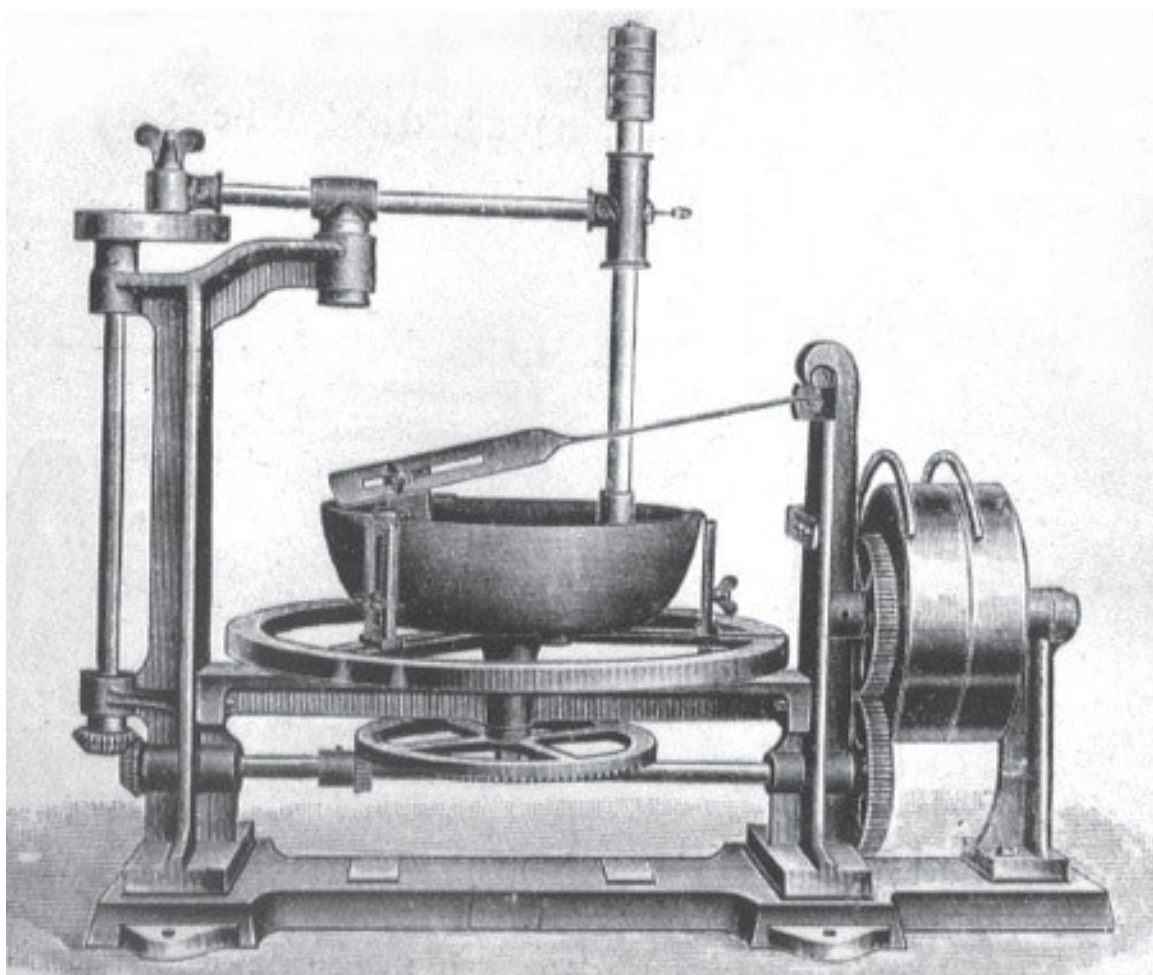


Fig. 7.1. Machine trituration



Fig. 7.2. Hand trituration

Metallic silver was first tested by Hahnemann, who described fifty-six symptoms in his *Reinen Arzneimittlehre* (Pure Medica), Volume 4. Subsequent tests were carried out by Franz, Groß, Haynel, and Herrmann, and Hahnemann subsequently recorded these as observations made by others, resulting in a total of 167 symptoms. As a result of the small number of people who conducted these tests, and what appears to be a complete absence of female test administrators, the “drug picture” that resulted does not appear to be

complete, especially when compared with ARGENTUM NITRICUM, homeopathic silver nitrate. Nevertheless, the drug picture of metallic silver, ARGENTUM METALLICUM, emerges as follows:

It has a connection to the central nervous system, to the mucous membranes of the respiratory passages, to the secretion and peristalsis of the digestive organs, to rheumatic and neuralgic changes of the skeletomuscular apparatus, and to changes of the testicles. The following list contains a selection of the most important proving symptoms that are treated in clinical practice using homeopathically prepared silver.

ARGENTUM METALLICUM Clinical Indications

Chronic, painful laryngitis: Potencies: C5–C12, corresponds to D6–D12

Chronic hoarseness, a feeling of scraping or splinters in the larynx, which are made worse when speaking or coughing

Dry coughing and hacking, which becomes worse when speaking and laughing

Chronic pharyngitis: Potencies: C5–C12, approximately corresponding to D6–D12

Chronic inflammation of the mucosa of the throat

Painful pharynx, which becomes worse during coughing

Slimy, gray, gelatinous sputum, expelled in the morning

Testicular induration: Potencies: C5–C9, approximately corresponding to D6–D10

Continuous pain, sensations of pressure or of being pinched, which become worse when walking

Painful sensitivity of the spermatic cord

Weak erections, loss of semen without an erection

Uterine-ovarian disorders: Potencies: C5–C9, approximately corresponding to D6–D10

Chronic ovaritis with hypertrophy and induration

Inflammation of the uterus with a tendency to ulceration

A sensation of an enlargement of the ovaries

Leucorrhoea, yellowish, sharp, leading to soreness, and foul-smelling

Paresis with spasticity: Potencies: C5–C9, approximately corresponding to D6–D12

Physical and psychological weakness, thinness, gray-earthy complexion

Spasms, contractures, numbness, and tremors of the limbs

Joint pain with stiffness, back pain that becomes worse when sitting

Sadness, silence, bad mood

Restless sleep with very frightening dreams

SILVER IN ANTHROPOSOPHIC MEDICINE

Anthroposophy is a spiritual philosophy first articulated at the turn of the nineteenth century by philosopher, social reformer, architect, and esotericist Rudolf Steiner. Out of this philosophy came diverse initiatives to transform education, medicine, agriculture, the arts, the socio-economic order, and other areas of social life. Anthroposophical medicine was developed as an outgrowth of Steiner's philosophy, as a spiritually based technique based on "knowledge of the nature of man." The Physicians' Association for Anthroposophic Medicine defines it as a holistic extension to conventional medicine.

Anthroposophic medicine uses mineral, vegetable, metal, and animal-based raw materials, often in homeopathic dilutions.



Fig. 7.3. Medicines from Weleda: ARGENTUM METALLICUM

In anthroposophic medicine, silver is used to stimulate certain processes in the body. These silver processes are regarded as carriers of renewed life. They are largely responsible for growth, structure, regeneration, reproduction, and elimination. According to anthroposophic medicine, silver acts primarily on the organ systems of the mucous membranes and the skin, as well as the reproductive system.

ARGENTUM METALLICUM praep.

In accordance with the anthroposophic view of people and nature, ARGENTUM METALLICUM praeparatum, which is comparable to colloidal silver, is used to stimulate and structure the restorative metabolic processes, for example, for the fatigue of fever, acute inflammatory illnesses, as well as constitutional frailty, following acute and chronic mental stress, and for sleep disorders.

The types of preparations that are normally used include dilutions (drops) and triturations (powder). These are administered to treat fevers, problems arising from stress, and for sleep disorders; the injections (ampules) are used for more extensive systemic conditions and inflammatory illnesses, while ointments are used to treat skin illnesses.

SILVER IN ALCHEMY

During the period between 1500 and 1920, we have some thirty-five descriptions of alchemical silver preparations. In our opinion, the instructions of Johann Agricola (1589–1643) offer us the most reasonable alchemical preparation:

Take ground fine silver, and using Spiritu Salis Nitiri which has been fortified with sublimated Sale Harmoniaco, dissolve this into a water, and then precipitate it out with copper or with salt, and it will become sweet water. But others use nitric acid and dissolve the silver in this and then precipitate it with copper. You then take this same silver and sweeten it with water and then dry it over a low fire. . . . Then place this into a closed glass vessel with a flat bottom and place this in warm sand, give it fire day and night for eight weeks, so that the silver does not melt, and in such constant heat the silver will calcinate and reverberate, so that it will subtly accrue like a sponge. Then pour Sulphur Lunae over the molten silver, which will dissolve the silver into a blue oil or liquid. Seal the glass and coagulate it to a black earth or to ash. Pour the water of paradise over these ashes and purify it to the highest possible degree, and this will induce the ashes to produce a beautiful salt or vitriolum, and this salt can be used to prepare a wonderful oil. . . . When the silver is then brought into the salt or vitriol, you should purify this of its earth and sediment. Then, dissolve the same salt with Spiritu Vini Tartarisato and distill this repeatedly until all of the salt has finally risen with the Spiritu Vini over the top like a light brown liquid or oil. This is the Argentum Potabile. (Agricola 1638, 136, 157).

Agricola says this alchemical preparation could be used for dropsy and dysentery, sleeping sickness, melancholy, poor memory, and afflictions of the heart and brain. In modern times, the indications include depressive syndromes and endogenous depressions, nervous overstimulation, psychological and cyclothymic disorders, and delusions.

SILVER IN TECHNOLOGY

In medicine, the innate sterility of silver makes it ideal for manufacturing artificial skull plates and limbs. By figuring out how to apply a long-lasting silver layer to the plastic tube that is inserted into the urethra, a German physician has been able to significantly reduce the high risk of infection commonly found with urinary catheters. And pharmaceutical companies currently offer thin layers of silver foil that can be inserted into deep wounds, such as those caused by bed sores. Bandages and wound dressings impregnated with silver, designed to prevent infections and inflammation, are now widely available at pharmacies.

Silver is used as an alloy to manufacture corrosion-resistant contacts in electronic components, and to make integrated circuits. The high melting point of silver makes it an indispensable solder for electronic devices and for brazing. The electronics alone needed to operate a commercial-size passenger aircraft contain over 220.46 pounds (100 kg) of silver. The aerospace industry also uses far more silver than gold.

An alloy of mercury and another metal is referred to as an amalgam. In dentistry, amalgams of silver and mercury are used to fill cavities. The silver helps to harden the much softer (and, because of its toxicity, the more controversial) mercury. Up to 70 percent of all amalgam fillings are made of silver. In this regard, the interaction between the saliva and the silver (and its excellent electrical conductivity) results in a flow of a weak electrical current, and the resulting electrolytic process causes mercury to leach out of the filling, which can lead to massive health problems.

Due to its optimal reflective properties, silver is used in the manufacture of mirrors. When a layer of glass is placed between the silver coating and an isolated fluid, silver will not only reflect light but also warmth and cold. This makes it well suited for use in thermos bottles and similar containers. On the other hand, when silver comes into direct contact with a warm or cold substance, it will quickly take on its temperature. Here we can see the quality of silver to completely step back from itself and fully give itself up to an encounter with another substance.

Silver may also be used to galvanize objects. It can be used to lay down a very thin layer onto any conductive surface, thereby making it acid-resistant. It is this acid resistance that gives silver its status as a precious metal. However, silver will oxidize in the presence of sulfur, which is why silver cutlery must be cleaned frequently.

The Micropur water purification tablets produced by Katadyn are indispensable for travelers, and for good reason. According to the World Health Organization (WHO), 80 percent of all travel illnesses can be traced back to impure water. The silver ions Ag^+ contained in the drops and tablets will sterilize water that is optically clear in two hours. Stored drinking water will remain potable for six months and protected against algae and odors.

The antibacterial effects of silver are also used to full advantage in fabrics that make use of silver (e.g., www.agiene.com). A metalized polyamide fabric containing silver ions is used to make socks. When the silver ions come into contact with the skin, they help to prevent the spread of bacteria, thereby minimizing foot odor and the risk of athlete's foot and other fungal diseases. At first, such silver-containing undergarments, which were made for persons suffering

from neurodermatitis and allergies, were only available via mail order from specialty firms. Later, the same technology was used to make functional garments for use by high-performance athletes. Since that time, “silvered” sports clothing have become widely available.

Recently, Samsung has introduced a line of washing machines that offer a silver-wash function. Choosing this function releases silver particles into the wash, helping the clothes to remain fresh longer, while also eliminating germs.

APPENDIX 1

Colloidal Silver Q & A

What is the maximum period of time over which colloidal silver can be used?

From our experience, there is no maximum amount of time. The literature contains reports of people who have ingested colloidal silver for years. However, we believe that this is only sensible to do in cases of difficult, chronic illnesses that cannot be cured, and for which colloidal silver can help improve the person's quality of life. I myself (Werner Kühni) have been taking colloidal silver consistently for six years to treat Lyme disease.

Have there been any known allergic reactions to colloidal silver?

As far as we know, there have been none.

For which people will colloidal silver not work?

We do know of certain cases in which a person's intake of a standardized preparation of colloidal silver has not led to any improvement in their health, even when they have taken high doses. This has been observed in cases of rheumatic illnesses, inflammatory diseases, and allergic illnesses. We do not yet understand the reasons for these unusual results. In general, though, everybody reacts positively to colloidal silver.

What should I look for when purchasing a premade silver solution?

Colloidal silver should always be as fresh as possible. For this reason, it is much more important that you consider the date on which the solution was made rather than any manufacturer information about its shelf life. Some sources may offer a silver solution made from powdered silver in place of colloidal silver; we do not recommend these. Silver powder cannot be used to make a colloid solution. You should also inquire about the type of device that was used to make the colloidal silver. For information on where you can order suitable solutions of silver and your own silver-making generators, see the resource section at the end of the book.

Can I make my own colloidal silver?

Yes. With a standardized device, anyone can produce a colloidal silver of the same excellent quality as a professionally manufactured solution. In addition to having a good device and a sufficient power supply, it is important that you use steam-distilled water, that your silver electrodes be as pure as possible, and that your working conditions are completely hygienic.

What must I be concerned about with the silver electrodes?

The silver in your electrodes must have a minimum purity of 99.99 percent. To avoid any allergic reactions, the amount of metal—cadmium, copper, and nickel—that the electrodes may contain should not exceed 0.002 percent. With electrodes of this purity, the colloidal silver you produce should not cause allergies.

Why is it important that I keep my colloidal silver away from all other metals?

Because almost all other metals are less noble than silver, silver will collect on the surface of any other metal that comes into contact with the colloidal silver, causing that amount of silver to be removed from the colloidal silver solution. Depending on its concentration, it is possible for all of the silver to very quickly precipitate from the solution and collect on the metal surface.

Does powdered colloidal silver have the same properties as the solution?

No. Simply dissolving powdered silver into water will not yield a colloid. You cannot produce a uniform mixture of suspended silver particles in water in this way. The particles are much too big to become suspended. Moreover, it is extremely difficult to measure the precise amount of powdered silver that you should use: only 1 mg of powdered silver is needed to produce a water glass full of a 10-ppm

solution of colloidal silver. Measuring an amount this precise would require a much more sophisticated scale than is found in most homes.

What type of water is needed to make colloidal silver?

When making colloidal silver, only mineral-free water should be used. Tap water contains up to about 1,000 ppm of salts that could chemically alter the silver colloid you are making. If you start with a water containing 1,000 ppm of salts, it is very unlikely that you will end up with a water containing 10 ppm of a silver colloid. Some mineral waters may even contain as much as 2,500 ppm of salts. Therefore, the best water for making colloidal silver is twice-distilled water, which contains less than 0.01 ppm of salts. It is also possible to use water that has been treated through reverse osmosis, which contains under 1 ppm of any salts.

Isn't it unsafe to drink distilled water?

In principle yes, but the amount of distilled water that you would need to consume far exceeds anything that a person would normally ingest when taking it as colloidal silver. When used in a therapeutic manner, in which the maximum amount of distilled water that would be consumed daily for even the most chronic disease would be at most 600 ml, and given that you would also be ingesting normal amounts of nutrition, drinking this amount of distilled water would never become problematic.

Can colloidal silver be used prophylactically to prevent different illnesses, and especially to avoid colds?

No, there is no rationale for doing this. While taking colloidal silver at the first signs of many illnesses will help to slow down or stop the progress of a disease, taking colloidal silver will not prevent it.

Isn't colloidal silver an old home remedy?

No, because it has only recently become possible to produce true colloidal silver solutions. Between the 1930s and the 1980s, the compounds that were being touted as colloidal silver were actually an organic colloidal silver complex that was very different from today's colloidal silver. It is only since the mid-1980s that we have been able to produce the colloidal silver that we use today.

What is monatomic silver and monatomic gold?

The notion that underlies the concept of a monatomic substance is that it is possible for silver (or gold) atoms to exist as individual atoms. The "esoteric" silver or gold that is available through online sources is used for spiritual enlightenment. The alchemical method in which gold is repeatedly treated with hydrochloric acid (or nitric acid) and hydrogen peroxide ("cold fire") and then caustic soda to reduce the molecular form into individual atoms is said to be a method that will ensure that 100 percent of the gold is present in a single atomic structure that can be assimilated by the body and absorbed through the cell membranes. While this may theoretically be true for gold, it is not the case with colloidal silver.

Does “elementary” silver (in the form of colloidal silver) actually possess a shelf life of more than one year?

No. Elementary silver is said to consist of genuine particles of silver that are present in a highly concentrated dispersion in its smallest form as spheres that are only 0.01 micrometers (10 nanometers) in size. Because it is argued that these do not possess any electrical charge, it is claimed that such colloidal dispersions can be stored for long periods without sedimentation. This is physically impossible.

What is the simplest way to measure a concentration of colloidal silver?

There is no simple way to determine the concentration of colloidal silver in a particular solution, no matter whether you measure its electrical resistance, use the Tyndall effect, shine a beam of light through the solution, or simply apply the taste test.

APPENDIX 2

Sources of Error when Taking Colloidal Silver

There are a variety of reasons why colloidal silver might not be effective even if you have been very careful in selecting your product. It is possible for mistakes to have occurred when the solution was produced or stored, you may have incorrectly ingested or applied it, or the concentration may be wrong or the length of time you have used it too short.

Production: If tap water or mineral water was used instead of distilled water, or if any type of salts were added, then you will not produce colloidal silver. In addition, any contact with a metallic pot, stirrer, funnel, or spoon could result in the loss of some (or all) of the silver.

Storage: Exposure to an electromagnetic field, such as that present in a refrigerator or in an induction field, will cause the colloid to precipitate.

Ingestion: The most serious error that can occur when using colloidal silver is to use a metal spoon to measure or administer

the solution. For this reason you should always ingest it from a shot glass or another glass or ceramic vessel.

Application: It is important that colloidal silver always be used correctly whether you are using it externally or internally. Any time you apply colloidal silver externally, you should always administer an internal dose as well.

Concentration: The standard dosage for adults is 4 teaspoons (20 ml) of a 25-ppm solution taken two to three times daily. In certain cases, however, it may be necessary to increase the amount taken to as much as 3 tablespoons (45 ml), the concentration up to 50 ppm, and the number of times daily to as many as five. On the other hand, there may be reasons to reduce the dosage, to just 2 teaspoons (10 ml) of a 5-ppm solution, taken twice daily.

Duration of use: The length of time that one should take colloidal silver is especially important when dealing with illnesses that have been present for some time and are systemic and deep-seated. Often, a person will discontinue the use of the colloidal silver too quickly.

APPENDIX 3

Excerpts from the Literature on Using Silver

Crystals, gemstones, and other types of stones and minerals have been helping us to heal for years. A good example is the copper bracelets that people wear to help with arthritis, or the magnets people are now placing on various parts of their bodies to help with pain. The following excerpts from those who have previously written about the use of silver point to its efficacy as a healing metal.

Silver's energetic effects are many. It is associated with the zodiac sign of Cancer; it promotes love, peace, and protection; and it stimulates conscious intent, adaptability, and balance. Here are some of the other energetic qualities of this noble metal:

Physical effects: Silver has cooling effects and carries away heat and pain; it stimulates the vegetative nervous system, thereby harmonizing the function of the inner organs; promotes fertility in women; stimulates the activity of the bodily fluids; improves the ability of the skin to tolerate light; improves vision and the sense of balance, and reduces feelings of dizziness.

Mental effects: Silver frees the emotions and promotes emotional expression, as well as warmth and empathy; helps to maintain psychological control and balance and to let go of disturbing thoughts; reduces nightmares and anxiousness; strengthens or maintains mental flexibility; fosters the imagination, the capacity for empathy, and the receptive, medial side of being; helps bring the inner rhythms of life into harmony with the cycles of nature. (Kühni and Von Holst 2003, 63, translated)

Silver gem elixirs give the body a reflective coating that deflects, giving you immunity from lower vibrations and a sense of being pristine and clean. It can help reflect your real beauty when you have untrue projections. A feminine metal related to the moon and the element of water, its antiseptic capacities are used in water filtration systems as a purifier. As the metal with the highest conductivity, silver may be helpful in releasing shock or tension from the nervous system.

Silver is associated with the nervous tissue, and especially that of the brain. It stimulates the nervous tissue, thereby improving the flow of energy in the meridians. The intelligence quotient increases, and local brain regions, such as the speech center, are stimulated. The weak electromagnetic field that silver produces improves the circulation. The pineal gland, pituitary gland, and all vertebrae are invigorated. On the cellular level, silver finds itself in perfect balance with the principles of tissue regeneration. Silver is effective for all types of radiation poisoning, and especially for excessive exposure to x-ray radiation.

Silver should be administered frequently if there is an imbalance in the right brain. It follows that silver can also be used for different

disorders that are associated with imbalances between the left and right hemispheres of the brain, such as autism, dyslexia, epilepsy, and visual disorders. Additionally, the pineal and pituitary glands are strengthened.

Silver can be used to exert a positive influence on the psychological conditions related to stress in the nervous system. In the realm of the psycho-spiritual dynamic, the kundalini opens, and the resulting effects spread throughout the entire physical form in a harmonic manner. The ability to visualize grows, enabling the self to attain a natural harmony with the universal symbols. In this way, the symbols can extend their reach from the impersonal to the personal sphere of the individual. In addition, silver strengthens all thoughts.

The female qualities become balanced, and the nadis strengthened. Silver can be used as a bath additive. One should add only about 15 ml silver to the water along with any aromatic essences to which one feels drawn. The five key chakras above the crown chakra are activated. (Gurudas 1989, 274, translated)

It is said that silver bestows “an advantage” in life:

It can be used to elevate the quality of speech and bring eloquence into conversations. It tends to impart a cultivated flair to one’s appearance and to eliminate coarse traits, and in this way engenders popularity.

It can be used as a mirror of the soul, which people hold up so that they may observe themselves as if from outside. This observing

occurs without judgment and can be a step in the further development of that which the I Ching calls “superior people.” It provides patience and perseverance for the tasks one has set for oneself and enables one to understand the reasons for these tasks. It helps to expand perception and to regulate the emotional and intuitive energies. It provides for a very strong connection between the physical and the astral bodies; it ensures that one will always be able to “return home” from the astral level. It has the ability to strengthen the silver cord that binds the astral body to the physical body, and helps to reduce the unconscious fear that it may be impossible to return.

Silver is frequently found in association with gemstones, as the metal has the ability to attract and retain in itself those qualities that radiate from a stone. Silver has a stabilizing influence on the gemstone. It is also used in the manufacture of essences in order to charge the primary mineral for use in the essence; sometimes silver is brought together with one mineral during the process of preparing the essence of a different mineral.

Silver is known for strengthening the powers of the moon, and is an excellent mineral for charging other minerals during a full or new moon. It is used to direct the energies of other minerals to the places where they are needed: the malleability of silver causes the energies to bend and even become circular, allowing the vital energy centers to remain continuously open, energized, purified, and activated.

Silver can extract negativity out of the body at the same time that it is transmitting the positive energies of the other mineral into it; in this way it serves as a means to achieve balance. Silver helps to clean the body through its pores and deactivates toxins on a cellular level. It can be used in the treatment of hepatitis to improve the

assimilation of vitamins A and E and to alleviate problems with vision. (Melody 1998, 602, translated)

In addition, silver promotes

the synchronization of our mental-spiritual cycles with the light cycles of the year (seasons), the moon (moon phases), and the day. It frees the emotions, brings flexibility, warmth, and empathy, fuels the imagination, and alleviates somnambulism.

Physically . . . silver helps for throat inflammations, gastritis, and stomach ulcers. It conducts pain and fever away, has cooling, disinfecting, and antibacterial effects, and promotes wound healing, especially in cases of abrasions and burns. Silver helps with functional disorders of the sensory organs, especially the eyes and nerves, promotes fertility and the vitality of the sexual organs as well as the absorption of water and nutrients in the digestive tract. To treat inflammations and wounds, place silver directly onto the affected region for a short amount of time. Otherwise, it should be continuously worn for a longer amount of time. (Gienger 2009, 389, translated)

Footnotes

*1. While some consider viruses a life form—because they carry genetic material, reproduce, and evolve through natural selection—viruses lack key characteristics (such as cell structure) that are generally considered necessary to count as life. Because they possess some but not all such qualities, viruses have been described as “organisms at the edge of life” (Rybicki 1990, 182–86).

*2. In addition to silver, Nägeli observed that this antimicrobial effect is shown by ions of mercury, copper, iron, lead, zinc, bismuth, gold, aluminum, and other metals.

*3. Johnson & Johnson manufactures a dressing impregnated with silver, called Actisorb Silver 220 antimicrobial dressing, for use in wound care.

Resources

COLLOIDAL SILVER GENERATORS

The Silver Edge, www.silveredge.com

Scada Research, www.scadaresearch.com

Silver Lungs, www.silverlungs.com/generator.html

Silver Gen, www.silvergen.com

Silver Medicine, www.silvermedicine.org

CS Pro Systems, www.csprosystems.com

We also ship devices for manufacturing colloidal silver throughout Germany and the United States. We have gained extensive experience with a variety of devices and are happy to provide you with information about these. Contact us at:

Werner Kühni
An der Streu 29

Walter von Holst
Kornbergstrasse 32

D-97640 Stockheim

Germany

Telephone: +49 (0)9776 705157

E-mail: lavandinum@gmx.de

D-70176 Stuttgart

Germany

Telephone: +49 (0)711 2271203

E-mail: silber@steinkreis.de

PRE-MADE COLLOIDAL SILVER

Purest Colloids (colloidal silver),
www.purestcolloids.com/mesosilver.php

Earthborn Products, www.earthbornproducts.com

Natural Immunogenics, www.natural-immunogenics.com

Natural Path Silver Wings (colloidal silver in 250 ppm, 500 ppm)

Source Naturals (Ultra Colloidal Silver Salve, colloidal silver throat spray)

Heritage Products (colloidal silver salve)

FutureBiotics (colloidal silver)

SILVER-IMPREGNATED WOUND DRESSINGS

Actisorb Silver 220 (Johnson & Johnson), available online and in many pharmacies

Silverlon, www.silverlon.com/silverlon-advantage

SILVER-EMBEDDED SPORTS CLOTHING

Various sports clothing (shirts, socks, etc.) made with fabric manufactured by X-Static, available in catalogs such as Cabela, at various sports retail stores, and online.

INTERNET SITES

While Internet searches for colloidal silver will turn up countless pages, we have found that most of these repeat the same information, much of which is misinformation. Even more problematic is the fact that much of the information found on the Internet is wrong, while much good information is omitted. Unless care is taken, it is difficult for an Internet user to find reliable information. So we suggest you exercise discernment when researching colloidal silver on the Internet. Given this word of caution, the following are some sites that we have found to have accurate, reliable information; some of these sites also offer reliable colloidal silver products.

Journal of Independent Research and Studies,
www.colloidalsilver.com

Earthborn Products, www.earthbornproducts.com

Natural Immunogenics, www.natural-immunogenics.com

Natural News,
www.naturalnews.com/027235_silver_colloidal_antibacterial.html

The Silver Solution, www.realcolloidalsilver.com

Silver Medicine, www.silvermedicine.org/scientificstudies.html

Silver Colloids, www.silver-colloids.com/Pubs/history-silver.html

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About the Authors

WERNER KÜHNI

Born in Heidelberg, Germany, in 1949, Werner Kühni is an alternative health practitioner and psychotherapist. Trained in homeopathy and hypnosis, he also has extensive experience with aromatherapy. He is a dealer in fine essential oils and selected minerals and healing stones, and a professional consultant on healing stones and mineralogical identification. He is the author of six books and offers lectures and courses in clinical aromatherapy, healing with stones, singing-bowl therapy, and colloidal silver.

WALTER VON HOLST

Born in Stuttgart, Germany, in 1969, Walter von Holst was trained as an artist. He has been studying and practicing healing with stones as a form of therapy since 1989. He is a co-founder and board member of the Stuttgart Healing Stones Association, has taught healing with stones at various European schools of alternative health, and has developed a complete astrology of gemstones and a variety of therapeutic methods using minerals based on his methods. He is the director of Steinkreis (Stone Circle) in Stuttgart, a seminar center and a commercial dealer in healing stones, crystals, and health products.

The authors are available for lectures and seminars, and they welcome any general questions about colloidal silver, including its use and manufacture, as well your own experiences with colloidal silver. See the resources section (page 140) for their contact information.

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