

## Historical Uses of Silver Preparations

Hundreds of years before scientists and doctors understood what microbes were and how they cause illness, the health benefits of colloidal metals, particularly silver, were suspected. Ancient Greeks used silver vessels for water purification, pioneers trekking westward used silver to keep their water safe and to prevent dysentery, colds and flu, settlers in the Australian outback suspended silverware in their water tanks to slow spoilage, and topical silver antiseptic solutions were used during World War II.

Medicinal silver compounds were first developed in the late 1800s. By 1940, approximately 48 different silver compounds were on the market for treating a variety of ailments. These were available in oral injectable and topical forms and carried such names as Albargin, Novargan, Proganol and Silvol.<sup>9</sup>

The use of silver for purification purposes continues today. Silver water purification filters are used in Switzerland and by international airliners, silver catheters are used in hospitals and silver has even been used by NASA in water purification on space shuttles. Since 1973, silver has been shown to have topical activity against 22 bacterial species (643 isolates), including gram positive and gram negative bacteria<sup>10</sup>. New interest in colloidal silver has grown in recent years because of the emergence of antibiotic-resistant superbugs and the growing ineffectiveness of many antibiotics.

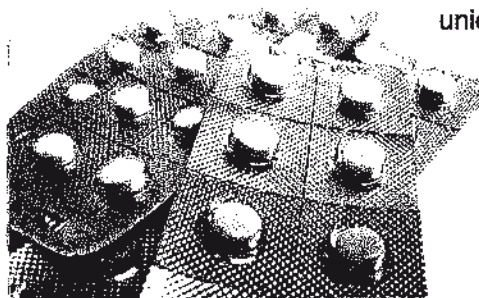
## An Increasing Threat: Antibiotic-resistant Superbugs

New interest in silver preparations has grown in recent years because of the emergence of antibiotic-resistant superbugs and the growing ineffectiveness of many antibiotics. More than 95 percent of staph bacteria are now resistant to penicillin. In the 1960s, methicillin replaced penicillin as the standard staph treatment, but today, more than 60 percent of staph bacteria are resistant to methicillin. In an October 2007 report from the Journal of the American Medical Association (JAMA), public health authorities estimate that MRSA strains are causing more deaths in the United States than AIDS.<sup>27</sup> Silver preparations, however, do not have the same problem with bacterial resistance. Even MRSA strains and avian flu respond to therapeutic silver preparations.

## New Patent, New Technology

In November 2006, a brand new patent requiring new technology and unique benefits was approved for a new Silver Sol. The patented Silver sol (#7135195) is created by 10,000 volts of alternating current. The resultant silver preparation resonates at 910 terahertz, with a pure silver core that is missing two electrons in its outer shell.<sup>11</sup> This new and improved form of silver

functions as an antibiotic more or less equal to pharmaceutical drugs but is unique because bacteria do not mutate or become resistant to it.<sup>17</sup>



## Mechanisms of Action

Silver Sol functions as a non-toxic internal antimicrobial or external disinfectant that is delivered to the site requiring treatment via one or several of three separate delivery systems: liquid, topical gel and aerosolized.

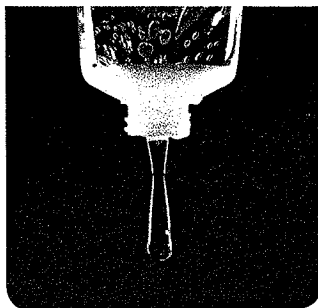
Silver Sol uses three primary mechanisms for action:

- I. Silver oxide
- II. Resonance
- III. Magnetic viral DNA disruption

**Silver Oxide:** Silver oxide kills bacteria on contact by pulling one electron from atoms comprising the bacterial cell membrane, thereby rupturing the bacterial cell.

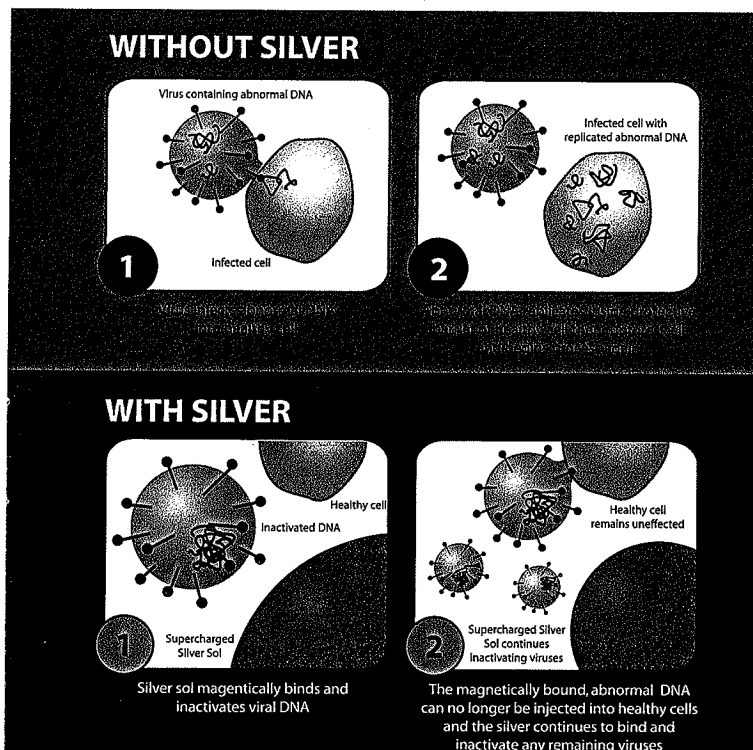
**Resonance:** Silver sol resonates at 890-910 terahertz—the same antimicrobial frequency used in “blue” germicidal laboratory lights. Silver sol nanoparticles are small enough to enter and rupture host cells via resonant frequency without additional risk of exposure to the surrounding tissue.

**Magnetic Viral DNA Disruption** – Viruses consist of a capsid that contains incomplete DNA segments, each containing a slight magnetic charge. The Silver Sol particle is engineered with an opposite charge that attracts the viral DNA and mechanically interferes with the ability of viral DNA to replicate. “Healthy” DNA does not contain a magnetic charge and remains unaffected by the charge of the Silver Sol.



## Patented Silver Sol Claims:

- Silver Sol destroys bacteria (at least 143 different types), viruses, fungi and other microbes.
- Silver Sol destroys MRSA, SARS, Malaria, Anthrax, gram negative bacteria, gram positive bacteria, and viruses including hepatitis C, HIV, and influenza.
- Silver Sol can be used as an internal and external disinfectant because it passes through the body unchanged, producing no dangerous metabolites and is 99 percent cleared by the next day.<sup>11</sup>





## Silver Sol Improves Antibiotic Function

A 2006 report in Current Science shows that silver exhibits equal or a broader spectrum of activity than any one antibiotic tested.<sup>17</sup> In fact, Silver Sol displayed a synergistic reaction when tested in combination with 19 different antibiotics. This synergistic effect was reported against the following bacterial strains: E.coli (MDR), P aeruginosa (MDR), MRSA, Staph aureus, S.typhi, Shigella flexeri, and B. subtilis.

Out of 96 tests, five combinations were synergistic, producing as much as ten times the efficacy:

- Silver Sol plus Amikacin, against MRSA
- Silver Sol plus Cefoperazone against MRSA
- Silver Sol plus Ceftizidime against E.coli (MDR)
- Silver Sol plus Ceftizidime against Pseudomonas aeruginosa (MDR)
- Silver Sol plus Kanamycin against E. coli (MDR)

Out of 96 tests, 89 produced an additive effect, demonstrating a reversal of antibiotic resistance in all categories of antibiotics tested. Some antibiotics demonstrated as much as a ten-fold increase in efficacy due to the broad spectrum abilities of Silver Sol, and no organism was found to be resistant to Silver Sol.<sup>17</sup> In fact, one 2005 study found Silver Sol eliminates 100 percent of microbes for 4 hours after application to hands.<sup>20</sup>



## Antibacterial Capabilities

Silver Sol kills ear pathogens at dosages of 2.5 ppm in 6 minutes<sup>19</sup>, as well as killing gram negative bacteria including salmonella and gram positive bacteria such as Staphyococcus aureus.<sup>11</sup> In fact, research shows that Silver Sol may kill up to 99.97 percent of B subtilis in three hours and 99.999999 percent of Yersinia pestis/plague in 6 minutes.<sup>11</sup>

According to a 2005 Congressional sub-committee publication, Silver Sol kills Nosocomial infections, i.e. pseudomonas aeruginosa, and MRSA as well.<sup>4</sup> A study out of Brigham Young University compared the effect of silver with five antibiotics on seven different pathogens: E. coli B, E aerogenes, E cloacae, S typhimunium, P aeruginosa, S gordonii, and S aureus. Although some antibiotics were effective on some bacteria, only silver had effective results on all seven.

Studies have also revealed that silver has proven bacteria-killing powers, including gram positive and gram negative bacteria, without destroying friendly flora such as lactobacillus. Antibiotics, especially powerful, broad-spectrum ones, can suppress immune function and negatively affect friendly flora leading to an overgrowth of yeast or other pathogens. Tests on silver show that it does not cause the same side effects.<sup>4,11</sup>

## Anti-Viral Potential

Silver sol can destroy reverse transcriptase and polymerase types of viruses.<sup>11</sup> The Institute for Antiviral Research also has research supporting silver's use against Avian influenza A, especially H5N1 bird flu.<sup>18</sup>

Test tube studies investigating silver's effect on the hepatitis virus have yielded positive results. While standard medical treatment offers 18 percent viral inhibition, silver delivered 89 percent inhibition of the virus without any side effects. Several additional studies have been completed or are underway to confirm these findings.<sup>25</sup>

A 20 ppm silver preparation was 98.4 percent effective against HIV cell cultures in a report from the National Virology Laboratory.

## Anti-fungal Potential

A 2005 Brigham Young University study found that silver kills *Candida albicans* in ten minutes without destroying healthy *Lactobacillus* (flora).<sup>19</sup> Silver has also been found to kill black mold.<sup>11,4</sup>

## Other Uses for Silver Sol

As an antimicrobial agent, Silver Sol has been shown to be beneficial in the treatment and prevention of burn infections, post surgical wound infections, and gynecological infections.<sup>2,3,14</sup>

## Safety and Toxicity

Silver sol is considered non-toxic, without side effects or contraindications, and safe for all individuals. It is pure silver that is permanently dissolved into solution and retains the magnetic properties acquired during the manufacturing process. It is absorbed, distributed and excreted unchanged. The only known side effect of taking high levels of silver salts is a cosmetic condition called argyria. This condition is not dangerous or debilitating. It simply gives the skin and gums a grayish hue.<sup>26</sup> Several quarts of silver solution a day would be required to experience side effects of this sort. Silver sol causes no dependence or addiction. It does not interfere with the action of antibiotics or other drugs. It is also environmentally friendly—it doesn't "encourage" drug-resistant pathogens or contaminate the environment.

Silver sol features a 5,000 mg/kg body weight and is cleared from the body 90 to 99 percent the day following ingestion.<sup>13</sup> The Merck Index from 1999 reports that silver is a metal that does not accumulate in the fats.<sup>12</sup> The EPA also considers silver safe and non-toxic. It would take a spill of over 12 million gallons to be considered a reportable spill.<sup>16</sup>



## Conclusion

Pathogens are becoming increasingly dangerous and deadly, and resistant strains are causing often deadly outbreaks in hospitals, nursing homes, schools and restaurants. Antibiotics are being misused and over-used or become ineffective. New therapeutic silver preparations offer a safe and effective means of fighting pathogens where antibiotics and other drugs fail. Research on colloidal silvers is broad and spans several decades. Reputable labs at the University of Georgia, Kansas State University, Penn State, Arizona State, University of Arizona, University of California at Davis, and Brigham Young University are among those that have completed research supporting silver's use in fighting microbial infection.

## Endnotes

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