

Colloidal Silver - Antimicrobial, Antifungal and Antiviral Mechanisms with Clinical Actions

By Lyn M. Hanshaw, BA, MA, MD



A Brief History of Medicinal Silver

Silver has been widely and effectively used in the science and art of healing since ancient times. Dr. Eric Rentz thoroughly describes the historical stepping stones of the development of Silver solutions in his article “Historical Perspective on the Clinical Use and Efficacy of Silver”. The key points he recounts include that Silver was commonly used to preserve water and food in the ancient world. Hippocrates (born 460 BC) the “Father of Western Medicine” used silver to heal wounds and control infection. He promoted the use of powdered silver for the treatment of ulcers and other conditions. The historian, Herodotus (born 484 BC) described the King of Persia using water boiled in silver flagons to prevent illness. In the Middle East, medicinal silver has been use since 700 A.D. It was commonly used for blood purification, heart conditions, and control of halitosis. Paracelsus (born 1493) “The Father of Toxicology” used silver as medicine.

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Alexander I of Russia had his armies use water casks lined with silver to sanitize drinking water during the Napoleonic wars. The Imperial Russian army continued this use through World War I and Soviet soldiers during World War II used them as well.

Raulin recorded the first description of the water-purifying effect of silver in 1869, when he saw that *Aspergillus niger* would not grow in silver vessels. Also, in 1869 Swiss botanist von Nageli discovered that some metals, including silver, at minute concentrations had antimicrobial properties. Then, in 1884

Carl Crede used 1% silver nitrate to prevent ophthalmia neonatorum. By 1897, silver nitrate was commonly used in the U.S. to prevent blindness in newborns. In the mid 1880's, Dr. William Halsted, Chief Surgeon at Johns Hopkins Medical School, started the use of Silver wire for hernia operations. He also implemented the use of Silver foil to prevent infection spreading in wounds. By the late 1800's, it was common medical knowledge that Silver was deadly to bacteria.

"Metallic silver and silver compounds are used widely in medical devices and health care products to provide anti-bacterial and anti-fungal action. Experience has shown that they are generally safe in use and effective in controlling pathogenic organisms." Alan B.G. Lansdown, Faculty of Medicine, Imperial College, London, UK

Results RNA ACS 200 EXTRA STRENGTH KILL TIME STUDIES

Borrelia burgdorferi	99.99984% in less than 8 mins
Salmonella bongori	99.999927% in 3 mins
Candida albicans	99.99989% in 2 mins
MRSA	99.999984% in less than 3 mins
Staph. aureus	99.9996% in 15 secs
Pseudomonas aeruginosa	99.999979% in 3 mins
Legionella pneumophila	99.9996% in 2 mins
Rhinovirus	99.999% in 15 min
Powassan virus	99% in 60 mins

ACS 200 Extra Strength Kills *Borrelia Burgdorferi* Kill Time Study Results



Modern Research and Silver Use

With profound and proven historical efficacy, the use of medicinal Silver continued to evolve. Medical researcher Henry Crookes discovered in 1910 that Silver had germicidal action while in a colloidal state, but was harmless to humans. In 1928, leading scientist G.A. Krouse made use of Silver coatings in water filtration systems in swimming pools. Shortly thereafter it was discovered that charged silver killed *E. coli* in water. From 1900 to 1940, Silver was the main antibiotic used in the medical world. By 1939 more than 96 different Silver-based medicines were in use, including IV preparations, as listed in The Council on Pharmacy and Chemistry of the American Medical Association.

In a landmark antimicrobial kill-time study performed in the 1980's, Dr. Larry C. Ford of UCLA Medical School documented that over 650 different disease-causing pathogens were killed when exposed to a specific formulation of colloidal silver called Advanced Cellular Silver, manufactured by Results RNA.

A leading authority on the use of medi-

cal silver, (Alan B.G. Lansdown, PHF, FRC Path, Honorary Senior Lecturer, Department of Chemical Pathology, Faculty of Medicine, Imperial College, London, UK) stated after reviewing all available silver literature of the past 200 years, *"Metallic silver and silver compounds are used widely in medical devices and health care products to provide anti-bacterial and anti-fungal action. Experience has shown that they are generally safe in use and effective in controlling pathogenic organisms."*

Also a noted author, Alan B.G. Lansdown wrote the invaluable book, *"Silver in Healthcare: Its Antimicrobial Efficacy and Safety in Use"*, published in May, 2010. Excerpt from the review: This publication is a comprehensive account of the history of silver in medicine, its clinical benefits and wide advantages as a broad spectrum antimicrobial agent. It is clear from the extensive array of publications in recognised and unofficial press, that many misconceptions and misleading conceptions have been perpetuated, leading to errors in evaluation of the safety of the metal in occupational, domestic and therapeutic situations.

The End of Antibiotics

Discovered almost 80 years ago, antibiotics are man-made, synthetic chemicals that kill certain bacteria by interfering with various processes in the synthesis of the cell wall or proteins. Today, many bacteria have become resistant to antibiotics. With the efficacy of antibiotics in serious decline, the number of lethal hospital infections is rising worldwide. Pathogens such as *Clostridium difficile* (*C. diff*) and Carbapenem Resistant Enterobacteriaceae (CRE's) have been declared by the United States Centers for Disease Control as the two most deadly pathogens afflicting US hospitals today. These 'superbugs' have learned to evade the effects of even the strongest antibiotics with deadly consequences. An additional failing, antibiotics are not effective against either viruses or parasites.

According to the Centers for Disease Control and Prevention of the United States, *"Antibiotics and similar drugs, together called antimicrobial agents, have been used for the last 70 years to treat patients who have infectious diseases. Since the 1940s, these drugs have greatly reduced illness and death from infectious diseases. However, these*

drugs have been used so widely and for so long that the infectious organisms the antibiotics are designed to kill have adapted to them, making the drugs less effective.

Each year in the United States, at least 2 million people become infected with bacteria that are resistant to antibiotics and at least 23,000 people die each year as a direct result of these infections.”

With the end of antibiotics now at hand, there is clearly a desperate need for an effective and safe antimicrobial agent capable of eliminating bacteria, virus, molds, and yeast and without provoking side effects. Today with many advanced Silver-based technologies, practitioners and patients alike are adopting medicinal Silver as their clinical solution to infection treatment and prevention.

Silver Increases the Efficacy of Antibiotics by 1,000 Times

Recent research by Collins, et al (2013), Boston University demonstrated that Silver can enhance the killing capacity of antibiotics that are proving to be less and less effective, as organisms adapt and become resistant. They demonstrated that dissolved silver ions interfere with several cellular processes in bacteria, including disulfide-bond formation, iron homeostasis, and metabolism. This research showed that low doses of silver can significantly increase the killing effect of antibiotics on bacteria, making them up to 1,000 times more sensitive to the antibiotics. These changes not only make the cell membrane more permeable, but also lead to increased production of reactive oxygen species, which can induce bacteria death via DNA damage.

Silver particles in a colloidal solution have a specific size, electron configuration, specific magnetic resonance, specific pH, specific electromagnetic frequency

and specific structural affect upon the water molecules. The Silver mechanism of action is multifaceted, including: electrical, magnetic, electromagnetic, chemical and resonant frequency. Silver can be dipolar and semiconducting. The atomic structure of Silver is missing a single electron in the outer shell. The shell will bind to any free electron available. When Silver comes into contact with a pathogen, it will “steal” an electron and this causes a rupture in the pathogen’s cell membrane, causing death. Based upon these characteristics, pathogens cannot develop resistant to properly formulated Colloidal Silver. It has broad-spectrum capacity to kill pathogens: bacteria, viruses, fungi and unicellular types of parasites. And unlike antibiotics, there are no bacteria that have proven resistant to the new formulations of Colloidal Silver.

A Return to Silver

In the 21st Century, medicinal Silver technology continues to evolve, with exceptional laboratory findings and clinical research on the rise. New and exciting medicinal Silver formulations are proving thousands of times more effective in kill-

ing microorganisms than the rudimentary Silver concoctions of the pasts.

Silver is effective in wound care, treating burns, bone prostheses, thrush and periodontitis, reconstructive orthopedic surgery, cardiac devices, and surgical appliances. New research is demonstrating efficacy of Colloidal Silver as treatment for HIV/AIDS, pneumonia, herpes and shingles. Another interesting antimicrobial aspect of Colloidal Silver was determined by R. Roy. In Anisodesmicity, he describes the resonant frequency of Colloidal Silver at 910 terahertz, which is in the ultraviolet range. This frequency is antimicrobial and kills pathogens by disrupting the cellular membrane.

Newly published research by Wakshlak (et al, 2015) has elucidated a previously unknown mechanism for the prolonged anti-pathogenic action of silver nitrate, which the authors called the “zombie effect”. This refers to the observation that a Silver nitrate-killed bacteria culture is capable of killing live bacteria. They observed that the live bacteria die quickly when introduced to a culture of dead bacteria killed by silver nitrate. The proposed mechanism is that the



live bacteria were quickly killed by the Silver retained in the dead bacteria. The authors' refer to Le-Chatelier's principle and Landmuirian behavior as the basis for the proposed mechanism.

Colloidal Silver cannot harm normal healthy cells of the body. Colloidal Silver is in a water-soluble form and there cannot penetrate the fatty layers of the mammalian cell. And unlike antibiotics, healthy gut flora is not destroyed by Colloidal Silver due to presence of a protective coating.

It should be noted that all Colloidal Silver formulas do not perform equally and it is important to dispel myths perpetuated online. As every silver formula provides varying degrees of efficacy, it is up to the consumer to do their homework in reviewing the manufacturer's published research. To illuminate our point, biopharmaceutical manufacturer Results RNA has significant research behind their Advanced Cellular Silver formula, which was originally proven in the 1980's at UCLA to kill over 650 pathogenic microorganisms. "Colloidal Silver" searches on the web provide results stating, "Colloidal Silver has been proven to kill 650 disease causing organisms." The UCLA testing results were achieved by Results RNA Advanced Cellular Silver only. As such, no other brand of Colloidal Silver can claim these results.

Additional research behind Advanced Cellular Silver has proven significant efficacy against a number of very difficult to kill microorganisms, achieving 99.9999% (complete) kill against *Borrelia burgdorferi* (The Lyme disease associated organism), Powassan virus, Rhinovirus, *Legionella pneumophila*, *Pseudomonas aeruginosa*, *Salmonella bongori*, *Candida albicans* & Methicillin-resistant *Staphylococcus aureus* (MRSA).

Some would have you believe that Silver in medicine isn't considered safe, nor

is it an essential mineral or that it will turn you blue. Contrary to this narrative are thousands of years of historical use of Silver in medicine. There are millions of people using commercially available Colloidal Silver formulas today, without incidence or side effects.

As we review the wisdom of the past and bring forward the scientific technology of medicinal Silver formulations into the present, it is important to advance our Silver knowledge in the modern day and apply it to improving the health of people everywhere. Today's Advanced Cellular Silver solutions are an important part of today's modern approach to improving health.

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About the Author



Dr. Hanshew practiced medicine on the seaside of Seattle for 15 years. She achieved Board-Certified in Family Medicine and Bariatric Medicine. She also has specialized training in Anti-Aging Medicine, Natural Hormone

Replacement and Environmental Toxicity issues relating to the exponential rise in the incidence and successful treatment of Autism, Fibromyalgia, ADD, Chronic Fatigue, Multiple Sclerosis, Obesity, Anxiety, Depression and Cancer.