

SILVER, MILD SILVER PROTEIN

AND WHAT YOU SHOULD KNOW ABOUT A SAFE AND EFFECTIVE ANTIMICROBIAL THERAPY ADJUNCT

By Daniel J. Bourassa, D.C., Glen Wilcoxson, M. D. and Ward Dean, M.D.

It seems the ‘form’ of silver used has bearing on its effectiveness and occurrence of side-effects.

One of the most effective anti-microbial therapies available to wholistic health practitioners today is Mild Silver Protein (MSP). Silver use as an antibiotic is not new. It has a long history and it has undergone resurgence of late. Even if you are not familiar with colloidal silver, you can be sure some of your patients are already using it. This article is about information you need to be aware of as their doctor. All silver products are not created equal and its effectiveness varies considerably.

Unfortunately, there is a lot of hype that has gone into the marketing of silver products. They include statements like: *No one knows why silver is so lethal to pathogenic organisms. “No known pathogenic virus or bacterium has been able to develop immunity to silver. Silver is not toxic to higher life forms and specifically in our case, humans.* This misinformation may hurt consumers and cause the removal of what is presently a very promising and effective OTC remedy (Gulbranson, et. al., 2000).

We have a good idea why silver as well as several other metals kill or inhibit microorganisms. These biocides enter the cell and in anionic or cationic (in silver’s case) manner bind and disrupt cellular metabolic machinery and structure. In order to develop a resistance to these heavy metal biocides, bacteria carry out chemical transformations of heavy metals like silver. They occasionally develop, usually determined by extrachromosomal DNA (or plasmids), modification of normal metabolic processes like oxidation, reduction, methylation and demethylation to confer resistance. Silver sensitivity is caused by a cell’s affinity to the binding of Ag^+ more effectively than Cl^- . In one instance, silver resistance is due to a lowered affinity of the cells for Ag^+ that can be complexed with extracellular halides, thiols, or organic compounds. (Silver, Misra 1984) In another instance, silver resistance was felt to be to formation of silver-sulfide complexes. (Slawson, et. al., 1994) In still other instances, extrusion of the toxic ion from the bacterial cytoplasm takes place (Cervantes, Silver, 1996) by cellular pumps (Rosen, 1999) or a periplasmic silver binding protein is used (Gupta, et. al., 1999). Chronic exposure of microorganisms to silver helps facilitate resistance to silver as well as other antibiotics (Russel 1997). There is a relationship between release of silver from mercury-silver amalgams typically used in dentistry and the selective development of antibiotic resistance (Roberts 1998). On the other hand, it has been observed that the ability to develop silver resistance significantly reduces the organism’s ability to act as pathogen.

Silver should not be considered totally ‘harmless’ to higher life forms. Silver may permanently discolor skin. This is a condition called ‘Agyria’. Agyria is noted as a ‘permanent’ ashen–gray discoloration of the skin, internal organs and conjunctiva. It is, however, considered a benign condition (Aaseth, et. al., 1981). Silver’s usage in burn treatment, prothetic implants and use in

tobacco-withdrawal tablets seems to have contributed to many of the more recent argyria cases (Van Garse, Versieck 1995). This has helped fuel an increase call to limit usage of silver preparations. There have also been a few reports of possible neurotoxicity (Rungby, Danscher 1984)(Ohbo, et. al. 1996) but others who have studied chronic long-term exposure have not reported this (Pifer, et. al. 1989)(Williams, Gardner, 1995). Silver, as does other heavy metals, affects mitochondrial energy production reducing available ATP. The good news is that some MSP products do not seem to exhibit these known side-effect characteristics in clinical doses and may offer your patients an effective alternative for today's antibiotic resistant microbes and pathogens.

Silver – The First Effective Antibiotic

Historically silver was chosen for drinking, eating and storage utensils because it does kill or reduces the pathogenicity of many microbes. As far back as ancient times people knew that silver containers helped retard the growth of microorganisms on food placed in them. Silver was the metal of choice when metal had to be placed in the body because it tended to prevent infection. Prior to refrigeration it was common practice to drop a silver coin into milk to retard spoilage. With the discovery of the 'Germ Theory' came the search for effective treatment to combat them. Silver preparations began appearing in the late 1800s.

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James South, MA, in chapter two of the Mild Silver Protein Manual, wrote “Silver was one of the mainstays of medical practice in Europe and America from 1900 to the advent of ‘sulfa’ drugs and penicillin in the 1940s. This ‘modern’ era of medical use of silver began in 1893, when C. Von Nageli reported the first systematic investigation into the lethal effects of metals (especially silver) on bacteria and lower life forms (Duhamel 1912). Various forms of silver were used to treat literally hundreds of ailments, lung infections such as pneumonia, tuberculosis, and pleurisy (Searle 1920); sexual diseases such as gonorrhea and syphilis; skin conditions such as cuts, wounds, leg ulcers, pustular eczema, impetigo, and boils (Legge Roe 1916); acute meningitis and epidemic cerebra-spinal meningitis; infectious diseases such as Mediterranean fever, erysipelas, cystitis, typhus, typhoid fever, and tonsillitis; various forms of septicemia including puerperal fever, peritonitis, and post-abortion septicemia (Searle, 1920); and eye disorders such as dacryocystitis, corneal ulcers, conjunctivitis and blepharitis (Vav Amber Brown 1916). Silver has indeed a broad spectrum of action and is claimed to kill some 650 different organisms (Stecher, Finkel, et al. 1960).”

Silver fell into a ‘medical memory hole’ after the development of antibiotics. This may not have been an outright condemnation of silver's effectiveness rather it was more likely a matter of economics and convenience. Silver preparations of this era were difficult to use, costly, time consuming and crudely formulated and generally unstable when compared to the ‘new’ sulfa and penicillin antibiotics. In fact, silver formulations often had to be mixed just prior to use and often

fell out of suspension. Additionally, many of these preparations were based on 'silver salts', silver nitrate (highly staining) or finely ground up metallic silver.

Popular Resurgence

Interest in silver's therapeutic properties has made it a popular nutritional supplement over the past couple of years. While the traditional medical monolith has been slow to notice, the FDA has not (Fung, Bowen 1996). In its zeal to protect us from ourselves, it is closely scrutinizing silver's resurgence. So far it has not moved to regulate silver products. What you should be aware of is that silver products are not standardized as to manufacturing process and quality (Harris 2000).

Silver preparations are available in health food stores and 'silver solution' generator kits are available on the Internet. These are often labeled as '*Colloidal*' silver but in reality they are actually ionic silver products. Ionic silver solutions are made by placing a silver electrode in water and passing an electric current through it. Its strength is around 3-10 ppm and has shown some effectiveness as an anti-microbial agent. This concentration, however, is considered too weak to be universally effective. Ionic silver, as well as silver-salt solutions, is unstable and potentially toxic.

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Silver particle size has a bearing on its effectiveness. In order to be effective, silver particle size should be small and fall within the 1 – 100 nanometer (nm) range. Silver preparations are most effective with stable silver particles in the effective range. Silver-salts and ionic silver preparations tend to have silver particles much larger than optimum. This is often in the micron range or larger, due to 'clumping' of charged particles and less than complete solubility. These facts have not stopped anecdotal claims of benefits and near miraculous claims of its anti-microbial power.

A BETTER SILVER PREPARATION

MSP products are true colloids that are most effective when they have silver particles that fall within the effective range in size. Additionally, MSP colloidal suspensions are stable allowing long-term storage, convenient usage and development of varied products to address different applications. Until MSP no silver preparation could reliably fill all these requirements for an effective silver product. As a note of caution, there are many silver products that are marketed as *MILD SILVER PROTEIN* making advisable to get evidence of stability and particle size from the manufacturer before using or recommending them.

Mild Silver Protein colloids are composed of silver atoms bound in a protein matrix as a carrier and are available in silver concentrations from 10 – 1500 ppm. The most common strengths used are the 50-400ppm MSP and manufacturers often use 'potentiators' such as DCAW (deionized cationic water) or DMSO (dimethyl sulfoxide). This makes for a near ideal or true colloidal

suspension that contains silver particles of optimum size and known strength that will remain stable for long periods of time. Because these silver atoms are protein bound and wont 'clump' together, the silver particle size will remain in the effective therapeutic range. MSP samples from one manufacturer, (that we prefer and use both intravenously and orally), was tested for stability. The initial MSP batch was demonstrated to have retained its original potency for over 9 years but the FDA has restricted product stability claims to only 5 years.

Mild Silver Protein is classified as nutritional product but ironically low levels of silver are considered to be nutritionally insignificant since there appears to be no known requirement for this trace element in biological systems. Silver is an antagonist to selenium and vitamin E in vivo. Silver can actually 'detoxify' selenium toxicity (Berry, et. al. 1995). Also it should be considered that argyrosis might occur due to silver's affinity to deposit as selenide (Aaseth, et. al. 1981). In the southeast U.S. where sub-clinical selenium deficiency is probably the norm due absence of environmental selenium intake, silver intake could possibly exacerbate selenium deficiency. Selenium, as you may remember, is important in the glutathione mediated detoxification systems in cells and the liver. Sub-clinical selenium deficiencies are associated with increased occurrence of certain types of cancers, cardiovascular disease, and other conditions. Here in the Southeast US we encourage patients to maintain adequate intake of these important nutrients especially when taking MSP.

MSP Appears Effective and Safe

The mild silver protein we have used over the past 5 years does not appear to have the adverse side effects usually reported to be associated with silver toxicity. This use includes administration to children (including infants) and IV titration. One child of a medical physician routinely consumes a bottle of MSP at the first symptoms of a cold or flu.

The most common adverse silver side effect is argyria. That, as noted earlier, is generally considered a benign discoloration or staining that occurs in tissues, especially in those areas that are exposed to sunlight. This appears most commonly associated with silver salt consumption and in fact is the result of silver binding to compounds containing selenium, or sulfur in tissues. Silver solutions that have an affinity for nitrogen bonding do not appear to exhibit this phenomenon. Interestingly, the stronger it's affinity to form metal-sulfur or selenide bonds the greater it appears to be effective as an anti-microbial. Several individuals have used high quality MSP for years without any apparent side effects or argyria discoloration.

One frequent side effect is a Herxheimer-like reaction that often follows oral intake in persons with candidiasis and in IV administration to patients with high titer counts of systemic pathogens, i.e. candidiasis, viral load in hepatitis and Lyme disease. This reaction manifests itself as headaches, myalgias, inability to sleep and general feelings of malaise that may last several hours. This reaction is thought to be associated with mass die-off of the offending pathogens and ensuing toxic effects on the body.

It is common to pre-treat the IV patients with oral MSP 400 ppm for several weeks prior to IV therapy. This seems to help reduce the Herxheimer-like reaction in many patients. If toxic overload is in fact the case then pre- and concurrent treatment with reduced glutathione (GSH) and it's precursors alpha-lipoic acid, N-Acetyl-Cysteine, and selenium (when deficient) should help reduce or eliminate this occurrence. In the case of long-term xenobiotic exposure, whether environmental or medically prescribed, silymarin (milk thistle) should also be added to this regimen to help regenerate the liver itself.

Therapeutic Application

The most common question asked is: “for what ailments is MSP effective as a treatment”. Quite simply put: MSP is effective against infectious microbes including bacteria, virus, protozoa and fungus. It is very effective if taken orally (P.O.) at the first sign of a cold or flu and appears effective against ‘viral’ infections where other antibiotics fail. Typical P.O. doses of 400 ppm MSP are: 1 tablespoon T.I.D or Q.I.D. for adults and 1 teaspoon T.I.D or Q.I.D. Surprising to many is the fact that there is no diarrhea or other problems that typically follow many common antibiotic protocols. A few of our patients would not consider foreign travel without taking 400 MSP solution with them.

MSP is also very effective a topical agent. Silver continues to be used to speed wound healing, treat infections, and purify water. Silver’s usage in the treatment of burn victims is well documented and a British firm is developing a new silver impregnated bandage to safely speed wound and burn healing. MSP is often combined with DMSO (a potentiators) when used topically. DMSO is thought to enhance the penetration and efficacy of MSP. Topical MSP products have been used by our patients to effectively and safely treat otis externa, eye and skin infections, onychia, sinusitis, oral ulcerations and minor burns.

Some physicians feel that silver’s effectiveness is dose dependent. Specifically, in the presence of an infective organism inadequate silver concentration may be insufficient to effectively eliminate it from the body. An analogy would be insufficient bullets (silver particles) to eliminate an opposing army (infective microbe). Therefore, silver preparations delivered in sufficient strength and quantities to the site(s) of the infectious agent is essential to effective therapy. Certain chelating agents, specifically EDTA and EGTA, enhance the antibacterial action of silver (Kaur, Vadehra 1988). Therefore, the inclusion of oral EDTA supplements may have additional therapeutic benefit in patient management.

IV infusion of MSP preparations is gaining acceptance in certain medical circles. In 1997, a limited study to determine MSP IV infusion on terminally ill HIV patients was made by a New Orleans businessman familiar with the benefits of MSP. He thought that if he could demonstrate MSP’s effectiveness on a limited number of severely ill HIV patients he could generate greater interest and funding for further study. He funded this study himself and it was done under consultation and supervision of physicians in Mexico, Cuba and the United States. All three subjects in the study experienced dramatic reversal of what had been a deteriorating clinical condition despite continuing prior behavior and drug use. Sadly, Louisiana’s federally funded No Aids Task Force failed to cooperate and largely ignored the rather dramatic reversal of the subject’s clinical condition (Author’s personal communications) (Dean, et. al 2001). This study, although flawed, demonstrated three things. First, IV 400ppm MSP is safe. Second, high concentrations (using 1500ppm) are possibly toxic. Third, and most important, IV administration of MSP can dramatically reduce the viral load and reverse the clinical deterioration of patients with HIV (Fig. 1) (Dean, Wilcoxson 2000).

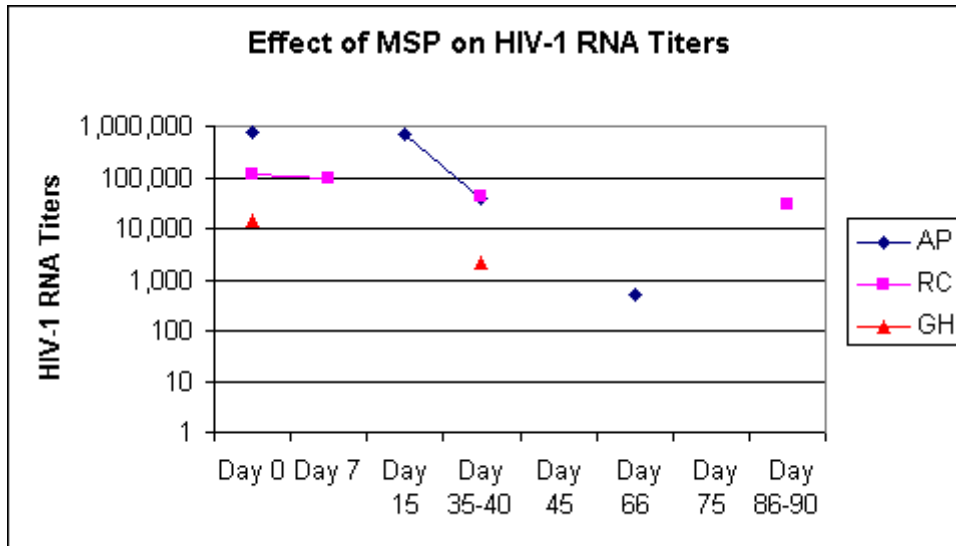


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Hepatitis and Lyme disease are two other conditions for which MSP IV infusion holds promise. Willy Burgdorfer, Phd., of Rocky Mountain laboratories, Division of N.I.H. reported that “in vitro studies, with MSP and the Lyme disease spirochete, *B. burgdorferi*, revealed a 100% killing effect within less than five minutes after exposure to the silver preparation”. Clinical experiences of the authors has affirmed dramatic improvement in long suffering Lyme disease, as well as influenza, arthritis and Hepatitis C patients.

A typical IV preparation used to treat hepatic, Lyme or HIV infections may include 40 -120ml. of 400 ppm MSP, 10 cc of DMSO and 2500 IU of heparin (to prevent phlebitis) in a carrier of 500cc normal saline and 7.5-15cc DCAW. This solution is then infused over a 2 to 3 hour period and the patient is monitored for 24 hours. It is often repeated, depending on the degree of illness, for 5 to 7 days, then once a week thereafter until pathogen titers stabilize or are eliminated.

Conclusion

When health practitioners are faced with patients that have pathogenic organism infections they now have a tool that may often surpass prescription antibiotics in effectiveness without the side effects. Presently one of medicine’s greatest problems is the rise of antibiotic resistant microorganisms. All antibiotic drugs available today kill or inactivate only a limited number of organisms. Many are terribly toxic at high doses required to be effective. MSP is often effective where these drugs fail and many physicians in alternative medical practices are developing protocols and treating terminally ill patients. It is important that you know your MSP product and obtain particle size and stability test results from the manufacturer. We have found it an effective adjunct for our patients and frequently recommend it use.

If you are interested in more information regarding mild silver protein products, research and therapeutic protocols, type ‘mild silver protein’ in your internet search engine or visit: www.mildsilverprotein.com.

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