



## Silver Shield

Stock #4274-1 (4 fl. oz.)

Bacterial resistance to commonly used antibiotics has exploded into a major global healthcare problem in recent years. Initially associated primarily with hospital-acquired infections among critically ill and immunocompromised patients, antibiotic resistance has now emerged in local communities and is no longer a problem exclusive to acute care hospitals and intensive care units. Just as alarming is the decline in research and development of new antibiotics to address the growing threat of resistant microbes.<sup>1-6</sup>

In light of this current dilemma, silver, an age-old remedy, is experiencing renewed interest among some scientists, due to its extraordinary antibacterial properties and long history of use to fight infections, control food spoilage and purify drinking water. According to the U.S. Environmental Protection Agency (EPA), silver compounds have been employed for medical purposes for centuries. In the 19th and early 20th centuries, a silver compound known as silver salvarsan (or silver arsphenamine) was used to treat syphilis (a sexually-transmitted disease) and silver nitrate drops were used in newborns' eyes to prevent blindness caused by bacterial infections passed from mother to child during birth. In the last few decades, silver has been introduced into the production of antimicrobial coatings and products, water purification, dietary supplements, and in modern medical applications such as special stents, catheters, wound dressings, bone prostheses, cardiac devices and surgical appliances. Today, silver compounds are widely used as effective antimicrobial agents to combat pathogens (disease-causing organisms), including bacteria, viruses and eukaryotic microorganisms such as fungi, in both the clinical setting and for public health hygiene. Even the Russian Space Agency uses silver to purify drinking water for the Mir space station and the Russian portion of the International Space Station. Furthermore, based on current research, true bacterial resistance to silver is rare, making silver a viable alternative to antibiotics and disinfectants.<sup>7-19</sup>

Research into the use of silver for medical and other purposes has led to the development of silver nanoparticles—microscopic-sized silver particles that are less than 100 nanometers (a billionth of a meter) in diameter. These nanoparticles of silver have exhibited strong antibacterial activity and have been shown to be non-toxic and virtually free of adverse effects. Silver nanoparticles are already being used in the treatment of burns and wounds, while new breakthroughs in biotechnology have enabled silver nanoparticles to be incorporated into fabrics for clinical use to reduce the risk of nosocomial (hospital-acquired) infections and for improved personal hygiene. In addition, new research has confirmed the effectiveness of silver nanoparticles against superficial fungal infections caused by dermatophytes—parasitic fungi that infect the skin. Experimental data also suggest that silver nanoparticles could be employed to treat immunologic and inflammatory diseases. Furthermore, both in vitro and animal studies have confirmed that silver nanoparticles do not disrupt or inhibit beneficial intestinal microflora.<sup>2,7,10-12,19-25</sup>

Results from recent studies have confirmed the antibacterial activity of silver nanoparticles, even against proven resistant strains, as well as their potential as a broad-spectrum antiviral agent. In addition, silver nanoparticles have been shown to produce synergistic and additive effects when used in combination with traditional antibiotics. For example, the antibacterial activities of penicillin G, amoxicillin, erythromycin, clindamycin, and vancomycin were all enhanced in the presence of silver nanoparticles against both *Escherichia coli* and *Staphylococcus aureus* in in vitro tests—*Escherichia coli* can cause infections of the urinary tract, gallbladder and abdominal cavity, septicemia (blood poisoning), infantile gastroenteritis (inflammation of the stomach and intestines), "tourist diarrhea" and hemorrhagic (bleeding) diarrhea, while *Staphylococcus aureus* infections can range from mild skin infections to severe and potentially fatal illnesses. Since antibiotic-resistant infections are a frequent occurrence that often results in therapeutic failure when treated with single-drug antibiotic regimens, some researchers have suggested the use of silver in combination with antibiotic therapy in order to achieve bactericidal synergism (a combined and increased effectiveness for killing bacteria).<sup>2,5,9,11,21,22,26-28</sup>

NSP's **Silver Shield** represents the latest technology in metallic silver nanoparticle solutions. Silver Shield is a patented formula (U.S Patent No. 7,135,195) that has been shown in independent studies to have broad-spectrum antimicrobial activity in vitro against various pathogenic microbes, including *Bacillus anthracis* (anthrax), *Candida albicans* (oral and genital infections), *Mycobacteria bovis* & *Mycobacteria tuberculosis* (tuberculosis), *Pseudomonas aeruginosa* (urinary, respiratory, skin, soft tissue, bone, joint and gastrointestinal infections, bacteremia (bacterial blood infection), and a variety of systemic infections), *Salmonella choleraesuis* (acute gastroenteritis), *Staphylococcus aureus* including methicillin-resistant strains or MRSA (illnesses ranging from minor skin infections to life-threatening diseases such as pneumonia, meningitis, osteomyelitis (bone infection), endocarditis (infection of the heart valves/heart lining), toxic shock syndrome and septicemia (blood poisoning)), *Trichomonas vaginalis* (urethritis (inflammation of the urethra) and vaginitis (inflammation of the vagina)), and even *Yersinia pestis* (bubonic plague). In addition, independent tests show that Silver Shield's patented formula also demonstrates antiviral properties in vitro

against hepatitis B virus and human immunodeficiency virus (HIV).<sup>8</sup>

Among the many antimicrobial tests conducted, Silver Shield's patented formula was tested against methicillin-resistant *Staphylococcus aureus* or MRSA. Beginning with a concentration of 6 million MRSA bacteria per milliliter, Silver Shield's patented formula at a strength of only 10 ppm killed more than 91% of the bacteria in 10 minutes. After one hour, 99.5% of the MRSA bacteria had been killed, with virtually all of the bacteria destroyed in one day—fewer than 10 of the 6 million bacteria remained. The growing magnitude of MRSA infections was confirmed in the *Journal of the American Medical Association* in 2007, which reported that the Centers For Disease Control estimates that nearly 95,000 invasive MRSA infections occurred in the United States in 2005, resulting in 19,000 deaths, thus surpassing the estimated 17,000 deaths in the same year from AIDS.<sup>6,8,29</sup>

Human studies have also been conducted using Silver Shield's patented formula, both internally and externally, as an alternative to traditional antibiotics. The studies were conducted in conjunction with 3 hospitals in Ghana, West Africa, involving a variety of human ailments among patients ages 5 to 75, including abdominal pain and diarrhea, bronchitis, conjunctivitis ("pink eye"), external skin infections (*Staphylococcus* skin infections, septic ulcers and infected abscesses), fungal skin infections, otitis media (middle ear infections), gingivitis (inflammation of the gums), gonorrhea (a sexually-transmitted disease), malaria, pelvic inflammatory disease, pharyngitis (throat infection/inflammation), rhinitis (nasal inflammation associated with the common cold), sinusitis (sinus inflammation), tonsillitis (infection/inflammation of the tonsils), upper respiratory tract infections, urinary tract infections, and vaginal yeast (candida) infections. All patients experienced a full recovery and/or complete resolution of symptoms within 1 to 8 days (depending on condition) using only Silver Shield's patented formula at a strength of 10 ppm.<sup>8</sup>

In addition, Silver Shield's patented formula was tested alongside traditional antibiotics (representative of the main classes of antibiotics) to determine its effectiveness against gram-positive and gram-negative bacteria—bacteria are generally divided into either of two categories based on their cell wall structure, as determined by the Gram stain. At only 10 ppm, Silver Shield's patented formula was shown to exhibit an equal or broader range of antimicrobial activity than any single antibiotic tested, including tetracycline, ofloxacin, penicillin-G, cefoperazone and erythromycin. Silver Shield's patented formula has also been shown to have superior activity compared to other commercially available silver products.<sup>8</sup>

Each serving of Silver Shield contains a concentration of 18 ppm (parts-per-million) of pure silver in purified, deionized water, providing a total of 90 mcg (micrograms) of silver per serving. Note: 1 microgram is equal to 1 millionth of a gram. Silver Shield contains no binding agents, chemicals, dyes, proteins, stabilizers or other ingredients.

It is important to point out that the epidemiological history of silver (a review of the use of silver among populations throughout history and its affects and risks upon public health) has confirmed that normal use of silver in minute concentrations is non-toxic and harmless. In rare instances, a cosmetic condition called argyria—a bluish-gray discoloration of the skin caused by silver deposition in the skin—has resulted from exposure primarily to soluble silver compounds such as silver salts or silver nitrate, not metallic silver. Additionally, a few poorly documented cases of argyria have been reported in recent years from ingestion of homemade silver solutions. In one such case, a 38-year-old man developed argyria after ingesting 16 ounces of a homemade silver solution at 450 ppm daily for 10 months. [To put this in perspective, Silver Shield is a 18 ppm solution with a recommended daily dosage of 3 teaspoons, meaning the above-mentioned individual ingested a solution that was 25 times as concentrated as Silver Shield at more than 30 times the recommended daily dosage for Silver Shield every day for 10 months.] Again, such isolated cases of argyria are rare, especially considering that according to the EPA, data from animal studies confirm that 90-99% of ingested silver is eliminated from the body within the first 48 hours following ingestion, indicating the unlikelihood for silver to accumulate in the body when consumed in small amounts.<sup>11-13,16,19,30-38</sup>

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