

Silver Ions in Medicine

Early Uses

During our westward expansion, cowboys, mining camps, and various outposts regularly dropped silver coins into the drinking water barrels to make it safe. By 1900 a variety of devices and medications were widely advertised for various health remedies. Silver foil was wrapped around wounds to help them heal, and colloidal silver and silver-protein complexes were ingested or applied topically to fight illness. Silver is still used in eye drops and in dental hygiene to cure and prevent infection. (Doctors have long discouraged the internal use of silver, discounting claims by some that ingested silver is a cure-all dietary supplement.) No scientific papers have challenged the clinical efficacy of these practices, but over the next several decades following the discovery of penicillin and the emergence of other biochemical 'antibiotics' caused the decline of these effective older, albeit more economical, remedies.

Modern Uses

As recently as during the March, 2006 American Physical Society meeting in Baltimore, the use of coatings of metallic silver on cannulas and catheters was provided. Today, the presence of antibiotic-resistant superbugs increases the demand for silver in hospitals. Small amounts of silver coat hospital surfaces and medical equipment to prevent the spread of pathogens. Silver in surgical equipment, wound dressings, and ointments protect wounds from infection. Silver sulfadiazine is especially useful for burn victims because it kills bacteria while also allowing the skin to regrow. Silver ion treatments can heal bone infections and allow regeneration of damaged tissue. Silver stents and other state-of-the-art devices have been in continuous use in major hospitals for some decades, attesting to the bactericidal efficacy of the metal.

Metallic silver has a second major use in human health – for the **reduction of pain**. In this application, the property involved is the high electrical conductivity and chemical inertness of the metal. Pain is reduced in mammals by short-circuiting the electrical pain circuits. Thus an industry has grown up around silver plated polymer (chiefly nylon) to provide inexpensive conducting fabrics. In wound healing, especially in many military organizations. High conductivity and antibacterial action are combined by using silver in clothing, socks, vests.

In spite of this enormous range of data, it is extraordinary that little effort is being made, beyond Pro Bono Science's efforts here, to expand the use of dilute silver ion solutions in everyday first-aid. Especially in light of silver ion's huge advantages in efficacy, ease-of-production (silver metal + water), low cost (essentially free) and in lack of side effects.