

HOW TO GO FORWARD: Introducing Quantum nano silver.

Abstract:

Colloidal silver and AGNPs produced in a myriad of different ways for decades, are dead, never having been scientifically described, banned by Authorities in most Countries and now without any identity other than convenient 'Buzzwords' without any meaning. It started out being referred to as colloidal silver particles that are neither a colloid nor consisting of particles. These meaningless terms have been used by many scientists as the subject of their research without ever identifying the material in any sensible way over a period of some 80 years to the present. Even more confusing have been the introduction of caustic Silver nitrate and finely pulverised metallic silver without any admittance by scientists on their true nature when using these substances. New on the scene is Quantum nano silver, better described as "neutral reconstituted nano metre sized quantum atomic silver clusters electrically suspended in water". It is based on the principles of Interfacial Science. A decade in the making, it has already made its mark in a series of 'In vitro' clinical trials at a number of Universities, presenting evidence of its biocidal effectiveness in a variety of ways.

The basic tenet and purpose of the website: hanslarooresearch.com, is to not perpetuate an absolute comedy of errors created by so-called colloidal silver that to date has been unable to claim even a token identity brought about by ignorance of physics by many in that Industry.

INTRODUCTION:

Produced solely by principles of Quantum Physics through the removal of the unpaired electron from a silver atom and subsequently returned by photonic action whilst submersed in water. Any new solvated atoms created that way each donate an electron to enable covalent bonding in small cluster formations to occur and remain stable for long periods of time. Able to be reproduced consistently and economically, provided strict rules of Ohm's Law and other Laws of Physics are adhered to, the new silver product may one day prove to be a direct replacement for failing antibiotics and able to deal with the ever increasing risks of infectious diseases.

HISTORY

It is 2019, the start of an era of paper thin Televisions sets and mobile phones smaller than a purse and able to access just about anything on the Internet and beyond. Gone however should be emotional attachments to valve radios, horse and carts, alchemy and the use of less than pure silver coupled with a complete absence of some standard for the water used. That such tactics have been used is evidenced by the content of too many papers that lack in accurate descriptions of materials used and avoiding these matters by using Buzzwords.

What exactly is Colloidal Silver? Whatever we call it, colloidal silver, colloidal silver nano particles or AgNPs, it makes no difference! For a start, it is neither a colloid nor does it consist of particles and for many of these products it is also made up of mostly ionic silver.

Since the introduction of colloidal silver in the early 1900s millions of people have been consuming these products for whatever was ailing them. However each silver product turned out different due to inconsistencies in the manufacture. No notes about production were kept and often concealed, thinking a magic elixir or potion had been discovered and often patented. In the end, all of these products proved to be nothing more than 'snake oil' and actually dangerous due to unknown hazardous contaminations. The new silver discussed is also recognised by the author as an indiscriminate killer of bacteria due to its inherent source of free radicals as well as being a transitional metal. At least we now know of its dangerous properties and learning how to best use it for targeted outcomes. Quite an improvement!

Before, during and after World War II there was a decline in the use of silver as an antiseptic with the introduction of new medicines like Penicillin, but the early 2000s saw a resurgence of silver usage that persists to this day and is on the increase for all the wrong reasons.

Over the past 80 years attempts by chemists, other scientists and laymen alike were all producing something with silver without forethought and common sense and appropriate instrumentation. Let us imagine not a million people, but just a hundred thousand trying their hand at electrolysis, electrochemistry, high voltage ablation (Bredig's method) or simply dissolving silver in nitric acid without any standard to go by. Even if it were a colloid, each individual batch produced would be nothing like that produced by another. Even trying to make each batch the same was troubled by inconsistencies, such as a silver made up of products consisting of a variety of particle sizes that could range from 20 to 200nm. X

The new silver

We must not lose sight of what we are really trying to accomplish and that is a substance capable of exploiting the unusual properties of silver we are only just now beginning to recognise as THE indiscriminate bacterial killing factor. It is referred to as the 'oligo-dynamic effect' and more precisely stated as the natural ability to shed its unpaired electron in the outer shell and as such become a source of free radicals. There is silver metal and the reconstituted variety produced in water by a simultaneous process of ionisation and oxidation into ionic silver and immediate reduction into neutral silver suspended in water. This brought about by photonic collisions at 420nm. This wavelength has been chosen as the least dangerous at 2.95 electron volt and natural absorption by silver and also a wavelength at which water becomes almost completely transparent and no impediment to the photonic interaction. It is a precise procedure using a controlled and limited direct current of 500 micro ampere at a voltage potential of 336 volt but also producing a precise outcome of an atomic cluster size range at between 10nm and below toward 3nm. Concentration will be highest at between 5 and 7 nm. The benefit of that is producing atomic silver clusters that possess an enormous surface area to volume ratio and an ability to get in very close to the pathogens to enable fast eradication. Using any capping agents however would negate this effect. Batches of samples produced this way since 2014 have proven to produce a high consistency and repeatability and devoid of interfering and destructive silver ions.

What makes silver unique as a metal?

1. Silver has no refractive index at visible wavelengths except for an absorption at around 420nm part of the spectral colour violet. The specific wavelength is decided by its purity.
2. Silver is highly reflective to almost all visible light. At least for 97%. It has 47 electrons and 47 protons, but due to the 47th electron being unpaired and located in the outer electron shell, a silver atom appears slightly negative and its outer electron can easily move away altogether. This feature makes it a highly electrical conductive compared to other metals as well as the source of free radicals. It shares some of its features, having an unpaired electron in its outer shell with gold 6th shell and copper in its 4th shell respectively.
3. Silver has a reputation as a highly photo-sensitive material and used during the 1900s deposited on Black and White film for exposure by violet and ultraviolet light and creating images. The material used for taking pictures was a material called silver halides.
4. This high photo-sensitivity also makes it possible for incoming and colliding photons to impact on an outer electron and make it shudder (oscillate) ever so slightly and move away again when the electron comes to rest once more. It goes by the name of Local Plasmon Resonance that generally leaves the parting photon red shifted (reduced energy) much like the ultraviolet light inside a fluorescent tube and being absorbed by the rare earth coating on the inside of the tube and thus reduced to visible light at a longer wavelength. Under some circumstances the impacting photon collides with a quantum confined electron contained in a pico or single digit nano metre sized atomic cluster. Chances are that the additional energy given to the parting photon by a quantum confined electron is given a blue shift and thus more energy than that it had before. Blue-shifts as short as 173nm (ultraviolet region) have been noted in some cases.
5. Silver is a transitional metal and an unforeseen incident cause a change to become one of about 40 different isotopes of silver conducive to cause harm. Transmutation to another element altogether could also happen when subjected to extremely high voltage levels. If that were not enough, concentrations of ionic silver ingested together with some neutral silver would bind with chemistry in the body also causing possible harm. This is particularly the case where finely pulverised metallic silver is used. Its manufacturers claim it can mimic other production methods of so-called colloidal silver. Test have born out that finely pulverised metallic silver submersed in water can cause damage to human cells.

Where do we go from here?

To work with unpredictable methodologies and produce so-called colloidal silver Ad Hoc, not to any standard, system or whatever and above all not understanding the materials involved, i.e. silver and water, we cannot expect to have a predictable outcome. For that reason and that reason alone we must proceed with caution and have a complete understanding of all procedures. That requires a written down text of all facts for a predictable outcome, specialised quality control instrumentation and production equipment that is up to the task and above all appropriate. It will also be required to know exactly **WHAT** to produce and not hope for the best as has been done in the past.

In 2009, a year after having started experimenting with producing so-called colloidal silver like everyone else was doing. Even some really way-out methods as far as my imagination allowed me to go. At some point however, I came to the realisation that I was wasting my

time with chemistry and that continuing in that area was futile. A new much more deliberate way had to be found. Perhaps the answer was in the realm of physics, even Quantum physics. Sometime later after some thinking, a new way presented itself when I realised the following elements:

1. The highly reflective properties of silver for most of the visible spectrum nevertheless absorbs part of the spectral colour violet at 420nm with an energy of 2.95eV, the start of ionising behaviour and the ability to donate or receive electrons. A free radical source.
2. Quite the opposite behaviour for water, becoming highly transparent at that same wavelength of 420nm. This meant that photonic light at these wavelengths are not in any way impeded and have absolute unfettered access to the silver electrodes submersed in the water.
3. Water is a dielectric and thus an insulator and if ultra-pure, water presents a very high internal resistance, most likely approaching Tera Ohms (10^{12} Ohm). With such a high internal resistance, low voltage potentials such as common in use at levels not exceeding 60 volts DC, (but generally only 9, 12 or 24 volts), were not able to conduct much in the way of current. Experiments conducted in that area proved that only a voltage potential of around 300 volts DC was able to exert a current flow of one half of a milli ampere (500 micro ampere). With that information also, I was able to proceed further.

Placing together all of this information, I was able to produce ionic silver, which when illuminated with a sufficient number of violet LEDs (276) out of an Audio visible device, I was able to produce a new type of colloidal silver that later proved itself to be totally devoid of ionic silver. The product showed itself to be an entirely new material that can be stated as a NON METALLIC covalent bonded number of silver atoms as a suspended cluster in water and having the same low conductivity as the water it was contained in. The news soon got out and culminated in a visit from two Dental scientists who immersed some human teeth in the silver product and expressed amazement that the teeth DID NOT TURN BLACK like other silver concoctions. In 2013 I published my findings officially. Incidentally that produced an invitation to write a Monograph on the subject.

Both the quantum reconstituted nano silver produced by the electro-photochemical process and the so-called colloidal silver particles about which is even less known, suffer from a loss of an accurate description and an thus an identity in limbo. In order to fill this void the following strategy will have to be implemented. That consists of a listing of the all the known properties of the materials used and able to be determined. These are:

1. The purity of the silver and water used, just as 99.999% purity of the silver to substantially minimise the percentage of heavy metals and for water a reciprocal resistance to current ratio of at least 10 million Ohm in a four liter tank of deionised water with a hypothetical conductivity figure of 0.01micro Siemens/cm³, *if that even exists?* The whole purpose being the avoidance of high concentrations of dangerous heavy metals such as lead and arsenic. These should not exceed 10 ppb compared to the concentration of neutral silver content at around 10ppm, i.e. at least a thousand times lower.

2. The actual concentration of reconstituted quantum based water suspended neutral atomic silver clusters that may be a choice of 1 to 15ppm (1 to 15 mg/litre) in compliance with the so-called required adherence to Minimum Inhibitory Concentration ((MIC).

3. The size of atomic atomic silver cluster formations appears to be governed by the wavelength of the irradiated photonic radiation. The shorter the wavelength of the reducing radiation, the smaller the cluster, i.e. a light source made up of 252 violet LEDs with a width of 3nm between 417 and 420nm produces an average cluster size 5nm. Obviously almost a monochromatic light but not quite, the actual cluster size must reflect the wavelength used. Experiments have shown these wavelengths to create a band of cluster sizes between 3.6 to 10.1nm. Obviously some widening of the quoted wavelength is not strictly correct. Another way of determining cluster size is the use of a spectral colour varying light source, using the principle that of a wavelength of light cannot be absorbed if the wavelength is too long for the cluster, i.e. some clusters are so small that normal spectral light from red to orange to yellow to green is incapable of scattering the light, but dark blue, indigo and violet shows up. There was an interesting incident with 4 bottles filled with silver clusters of varying sizes. At their small concentration all appeared to be no different to each other. A visiting scientist well equipped with a red and green laser pointer was able to see scattering on three bottles but not the 4th one. His comment was “just plain water in the 4th? “No” I said to him pointing a 405nm violet laser pointer light and producing a visible scatter. “The clusters sizes are just too small to scatter red and green light:

4. The interfacial electrical charge between neutral silver and water caused by hydrophobicity between water and silver is known as the Zeta potential. It is generally accepted that the higher the Zeta potential is (a minus voltage measured in milli volts) the more stable the mixture will be and able to withstand the attractive forces of the ‘van der Waals forces’. Any ionic silver in the mix will upset that stability.

6. Awareness of the extent of uncharged organic (pathogens and fungi) and inorganic content, the levels of which can be established by linear cross polarised light scattering and presence of obscuring levels by photo sensing means. Augmenting same with a diffraction grating providing a choice of differing spectral light will further enhance detection of unwanted content.

7. The use of consistency in production equipment, both in the quality of materials, e.g. borosilicate glass or acrylic materials for the tanks, the electronics and duration of any procedures. This will allow duplication by others on the principles of scientific research.

8. Predetermine protocols for its intended use in great detail with as much information that can be gathered by quality control instrumentation as well as on long-term safe storage facilities, preferably away from high temperatures and sunlight.

8. To restrict its intended use to *in vitro* testing and/or in a topical way, i.e. external use only.

Note! There have been unrecorded experimentations *in vivo* with unknown samples of questionable silver by many individuals ingesting these concoctions for any reason at all. This has prompted the Authorities of many countries to ban by enforcing Legislation of poorly and inaccurately described silver products in water.

CONCLUSION:

At present any claims about what is known about any type of silver suspended or dispersed in water, especially finely pulverised metallic and ionic silver, should be viewed with caution. Not until such time when the entire Silver Industry has adopted an International Standard based on thorough research on the effects and side-effects of silver per se and as a source of free radical agents and what damage can arise from that, should some trust be placed. Equally, there should be a warning on silver small enough to breach the blood/brain barrier and the damage that could arise from that. A water molecule is claimed to measure just 275 pico meter and a single silver atom about 330 pico metre. Even a more stable dimer of silver is still sized less than one nano metre in size, i.e. 660 pico metre. These measurements would give great cause for concern. Nevertheless research on pico and nano metre sized suspended neutral silver **MUST** continue as the only possible alternative to the failure of over-prescribed antibiotics before biofilm protected species of pathogens gain the upper-hand.

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