

Why Higher PPM Is Not Always Better - The Silver Edge

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Home of the Micro-Particle Colloidal Silver Generator,
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Steve Barwick, President of
The Silver Edge

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Why Higher PPM Is Not Always Better June 5, 2018 June 5, 2018



The so-called “ppm” (i.e., parts per million) of colloidal silver is a widely used, but also equally as widely misunderstood, designation.

For example, many people believe that ppm somehow designates the strength, or the microbial killing power, of colloidal silver. Others believe it represents the number of silver particles in a certain volume of water. But nothing could be further from the truth.

The ppm designation is also very often referred to as representing the *concentration* of silver in the water. But even this is not completely accurate.

What Is PPM?

So what exactly is “ppm,” as applied to colloidal silver, and what does it designate?

By definition 1 ppm of colloidal silver is one milligram of silver deposited in one liter of water (1,000 ml), otherwise designated as 1 mg/l. So it is, in reality, a measurement of the overall *weight* of the silver in a liter of water, not the number of silver particles!

Why is this so important to understand? Because the actual weight (i.e., ppm) of silver in a colloidal silver solution has very little bearing on its effectiveness. Instead, it is how finely *divided* the total silver content is, that ultimately determines its effectiveness. Here's why...

Finer Silver Particles for Increased Reach and Potential Killing Power

For example, an American Eagle silver dollar weighs about an ounce, which is approximately 28,349 milligrams (mg.). In a liter of water, that would be 28,349 ppm. Now relatively speaking, that's one heckuva lot of silver. But if you dropped a silver dollar into a one liter glassful of water and drank it, swallowing the silver dollar along with the water, it would have very little therapeutic value, except perhaps as it made its way through your intestinal tract where it would likely come into contact with a few colonies of pathogens and kill some of them. But overall, it would simply make its way through the intestines, and be excreted through the normal channel of elimination, coming out essentially whole in the feces. Because it is one whole piece, rather than being finely divided into many thousands or even millions of sub-microscopic pieces, it has zero absorbability into the body's cells, tissues and organs, and therefore only a comparatively miniscule opportunity to kill pathogens.

But what if you took just a tiny fraction of that one ounce pure silver coin, and finely divided it up into many thousands of tiny silver particles? For example, let's say you were to take just one milligram of silver from that silver dollar mentioned above. That's just 1 ppm of silver in a liter of water. And it represents just 1/28,349th of the total weight of that silver dollar. And let's say you were to divide that relatively tiny 1 mg. piece of silver into 500,000 miniscule particles. Since it only takes one particle of silver to disable one pathogen, you would now have 500,000 different opportunities to kill pathogens. So even though this is only a tiny *fraction* of the amount of silver contained in the silver dollar, it represents 500,000 times more anti-microbial killing power in the human body!

What's more, by finely dividing that 1 mg. piece of silver, it can now be easily absorbed by the body, and rapidly distributed throughout the body, which is to say, it can much more easily travel through the body, reaching into the organs and tissues and cells where pathogens colonize.

So by finely dividing that tiny 1 mg. piece of silver, you gain many multitudes greater opportunities to kill pathogens than you would have from placing the full one-ounce (28,349 ppm) coin into a liter of water and swallowing it whole!

So while the one ounce silver coin gives you a much greater level of silver by total weight in a liter of water (which is the definition of "ppm"), the dramatically smaller 1 mg. piece of silver that has been finely divided into 500,000 tiny pieces gives you literally *five hundred thousand times* more anti-microbial "killing power." This is what we mean when we say the ppm – or total weight of the silver in the colloidal silver solution – does not matter nearly as much as how finely divided that silver is.

Now, let's say you divide that 1 mg. piece of silver even more finely, into five million tiny silver particles instead of only 500,000. Since smaller silver particles are more easily absorbed by the body and distributed into the body's organs, tissues and cells, you have now made the silver ten times more

efficient than before. Instead of only 500,000 opportunities to kill pathogens, you would now have a full *five million* different opportunities to kill pathogens in the body. Yet you would still have the same exact amount of silver in your body – 1 mg per liter of water, or 1 ppm!

And if you further divided up that 1 mg. piece of silver into ten million very fine silver particles, you would achieve absolutely phenomenal absorbability by the body, and distribution throughout the body's organs, tissues and cells. And you would give yourself a whopping *ten million* different opportunities to kill pathogens. Yet you are still using the exact same amount of silver by weight – 1 mg. per liter of water, or 1 ppm!

Obviously, a 1 ppm (1 mg. per liter) colloidal silver solution in which the silver has been finely divided into ten million silver particles is going to be far more effective than a 1 ppm (1 mg. per liter) colloidal silver solution in which the silver was only divided into five million silver particles. So you see, the finer you divide that tiny 1 mg. piece of silver, the wider its reach throughout the body, and the more anti-microbial killing power *the same amount of silver* provides!

Do you see now why we say that the “ppm” designation can be quite misleading? Instead of “ppm,” you really need to know what the particle size of the silver is, in conjunction with the ppm.

The Importance of Knowing the Size of the Silver Particles in Your Colloidal Silver Solution

The particle size of silver in a colloidal silver solution is usually (though not always) expressed in terms of a measurement known as *microns*. We will use the micron designation here, simply because it is more widely used. Another popular designation is “nanometer.” A micron is simply 1,000 nanometers. So one nanometer is .001 microns.

To help put this in perspective for you, a human hair is about 100 microns wide, while a typical red blood cell is only about 7 microns wide. Most bacteria are somewhere between 4 and 15 microns wide. A virus, on the other hand, can be as small as .01 micron. Most colloidal silver products are measured in fractions of a micron. For example, a properly constructed conventional colloidal silver generator can produce silver particles as low as .05 microns in size...a very high-quality commercially produced colloidal silver product might contain silver particles as low as .005 microns in size...and the new Micro-Particle Colloidal Silver Generator can produce silver particles as low as [.0008 microns](#), which is eight ten-thousands of a single micron – many times smaller than a tiny virus!

Okay, let's say you are looking at two different hypothetical colloidal silver solutions. Both of them boast 10 ppm, which as you have now learned, is simply 10 mg. worth of silver in a liter of water. But one of these hypothetical colloidal silver solutions says its particles are .05 microns in size, and the other says its particles are .005 microns in size. Everything else being equal (price, amount of colloidal silver solution in the bottle, etc.) which of these two colloidal silver solutions represent the best value in terms of absorbability into the human body, and potential antimicrobial killing power?

Obviously, the colloidal silver solution with the more finely divided particles is the best choice, everything else being equal.

Why? Because silver particles measuring .005 microns are ten times smaller than silver particles measuring .05 microns. What's more, there would be approximately ten times as many silver particles in the .005 micron solution, since we know these two colloidal silver solutions contain the same silver weight (i.e., they are both 10 ppm). So you get ten times more silver particles, and ten times *smaller* silver particles, in the colloidal silver solution with silver particles designated as being .005 microns in size. Yet both colloidal silver solutions have exactly the same amount of silver in them, by weight!

This is why we say that knowing the *particle size* as well as the ppm is absolutely crucial in terms of being able to judge the potential value and effectiveness of a colloidal silver solution.

FDA Report:

Larger Silver Particles Are *Less* Bioavailable; Smaller Silver Particles Are *More* Bioavailable

According to the FDA's National Center for Toxicological Research Annual Report for 2011, in animal studies conducted by the agency only limited absorption of silver particles was observed when the silver particles were relatively large.

However, as the silver particle size decreased, *absorption increased proportionately*.

According to the report:

“Silver nanoparticles are highly effective antibacterial agents, and this property of silver nanoparticles is being exploited in an expanding number of commercial and consumer products.....During FY 2011, Division investigators examined the effect of the size of silver nanoparticles on the bioavailability, tissue distribution, metabolism, and clearance in rats. The results indicated that, after oral administration, only limited absorption occurs, with the extent of absorption *increasing as the size of the [silver] particles decreased.*”

— **FDA National Center for Toxicological Research Annual Report, 2011, page 19**

Researchers writing in a clinical overview published on January 28, 2016 in the journal *Nanoscale Research Letters*, agree with this assessment, stating:

“*Compared to larger silver nanoparticles, smaller silver nanoparticles have a greater binding surface and show more bactericidal activity.*” — **Nanoscale Research Letters, January 28, 2016, Plant-Mediated Synthesis of Silver Nanoparticles: Their Characteristic Properties and Therapeutic Applications**

This is why The Silver Edge stopped selling all other types of colloidal silver generators years ago, and focused solely on the new Micro-Particle Colloidal Silver Generator.

All studies we've seen on antimicrobial efficacy as well as bioavailability of silver demonstrates that the smaller the silver particles ingested, the easier it is for the body to absorb and utilize them.

Larger silver particles are treated by the body much as eating dirt would be treated, i.e., they go in one end and out the other. They are of no nutritional value, from a perspective of bioavailability.

But the body is able to absorb and utilize *smaller* silver particles with relative ease. That's why it's so important to focus on silver *particle size* over the concentration of silver in the solution (i.e., "PPM").

Too many people think higher concentration, or "PPM," means greater efficacy of the colloidal silver solution. But if the silver *particle size* is overly large — as it usually is with highly concentrated colloidal silver solutions — then bioavailability of that solution can be next to worthless.

The Micro-Particle Colloidal Silver Generator produces the smallest silver particles of any colloidal silver generator on the market we've yet seen, i.e., as low as .0008 microns, which is .8 nm — a fraction of a *single* nanometer!

These are *uncommonly small* silver particles, even when compared to those found in some of the most popular bottled brands of colloidal silver.

See the laboratory slide at [this link](#) for a visual comparison of tiny silver micro-particles and conventional silver particles.

Learn more about PPM versus particle size at [this link](#).

Why a Higher PPM Batch of Colloidal Silver Can Be Less Effective Than a Lower PPM Batch!

It should be obvious by now that the more tiny "slices" of silver you have in the same volume of water, the more opportunities you have to kill pathogens, and the greater reach throughout the human body those tiny silver particles will have, due to the simple fact that smaller particles are far more easily absorbed by the body, distributed throughout the body's organs, tissues and cells, and excreted afterwards. So you can have the same amount of silver *by weight*, but by dividing it into finer and finer particles you vastly increase its reach and effectiveness!

It should also be obvious by now that the designation of a higher ppm on a colloidal silver solution does not by itself equate to greater effectiveness. You can have a much lower ppm (i.e., much lower weight of silver in a liter of water), but if that silver is divided many times more finely than a colloidal silver solution carrying a much higher ppm, it is the *lower* ppm solution that will provide you with the greater benefit, rather than the higher!

This is not double-talk. It may sound counter-intuitive. But it is simple, irrefutable science.

Let's say you have two colloidal silver products: Product number one is 20 ppm (i.e., 20 mg. total weight of silver per liter of water) with silver particles that are .01 microns in size. And product number two is only 10 ppm (i.e., 10 mg. total weight of silver per liter of water) but has silver particles that are .001 microns in size.

The 20 ppm colloidal silver solution obviously has two times more silver by weight than the 10 ppm

solution.

But...the silver particles in the 10 ppm colloidal silver solution are 10 times smaller than the silver particles in the 20 ppm solution. So while a one ounce dose of the 20 ppm colloidal silver solution would contain *twice the total silver by weight* than a one ounce dose of the 10 ppm colloidal silver solution, the one ounce dose of 10 ppm would actually contain five times more silver particles!

This means you would get five times more potential anti-microbial killing power, and five times greater absorption and assimilation throughout the body, by taking one ounce of the 10 ppm solution, than you would by taking one ounce of the 20 ppm solution.

It is amazing. But it is absolutely true. And it is a testament to the fact that depending solely upon the “ppm” of a colloidal silver solution to judge its effectiveness is ignorance at best.

As stated by well-known colloidal silver researcher S.E. Foran in his landmark white paper on the therapeutic properties of silver:

Low Silver Concentration With Small Silver Particles (Charged Ions) Work Best

“Although silver has been used for thousands of years as an antimicrobial agent, during the last century there have been a number of suspicions raised about its effectiveness and safety. These concerns, however, have not taken into account the speciations of silver or the oligodynamic actions of this noble metal. The most current research indicates that a silver product must have a low silver concentration and contain small silver particles that are charged (ions) for it to produce the most beneficial effects.”

— S.E. Foran, **Therapeutic Properties of Silver: A Historic and Technical Review**, Quanta, January 2009

The Micro-Particle Colloidal Silver Generator...

That is exactly why the Micro-Particle Colloidal Silver Generator has become the #1 selling colloidal silver generator in America over the past three years. By more finely dividing the silver particles (see a Transmission Electron Microscopy photograph [here](#)), the colloidal silver solutions produced by this unit provide far superior benefit than many of the higher ppm solutions produced by conventional colloidal silver generators, as well as many of the the higher ppm solutions purchased in health food stores.

The Micro-Particle Colloidal Silver Generator is limited to producing solutions up to 10 ppm in a single three hour batch (however, you can let the machine run longer for higher ppm), but the silver particles it produces can be as low as [.0008 microns](#). That’s eight ten-thousands of a single micron in size! Compare that to a good conventional colloidal silver generator which might produce silver particles that are approximately .05 microns (that’s five one-hundredth of a micron) in size, and you can see that the Micro-Particle Colloidal Silver Generator is clearly the way to go if smaller particle size, greater anti-microbial killing power and superior absorption and distribution throughout the

body (not to mention superior elimination from the body) are important to you!

Indeed, while silver particles produced by a conventional colloidal silver generator are frequently visible under a standard laboratory microscope operating at only about 20,000x magnification, it takes a multi-million dollar Transmission Electron Microscope operating at a whopping 175,000x magnification to even begin to bring the tiny silver micro-particles produced by the Micro-Particle Colloidal Silver Generator into view!

The bottom line is this: What really counts is not the “ppm” designation of your colloidal silver solution, but how finely the total silver content has been divided, which is to say, how many tens of millions of tiny sub-microscopic particles are available per dose.

That’s why it isn’t necessary to have excessively high ppm (i.e., high silver weight) in a colloidal silver solution to gain extraordinary benefits from colloidal silver. It is only necessary to divide very small amounts of silver *more finely*. And that’s exactly what the new Micro-Particle Colloidal Silver



Click the image above to learn more about the Micro-Particle Colloidal Silver Generator that allows you to make high-quality colloidal silver for *less than 36 cents a quart*, and is so easy to use, even my 88 year old mom uses one!



P.O. Box 84910

Phoenix, AZ 85071

Phone Orders/Customer Service: 1-888-528-0559 (M-F, 8am to 4pm AZ time)

FAX Orders: (602) 943-2363 (24 hours a day)

Tech Support: (760) 253-2988 (M-F 9am to 5pm CA time)

Email Sales/Customer Service: sales@thesilveredge.com

Email Tech Support: techsupport@thesilveredge.com

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