

MicroSilver: An Innovative and Novel Approach in Dermatology

EXTRACTED FROM THE ROUND TABLE ON EAR AND SKIN INFECTIONS

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CONTAMINATION

COLONISATION

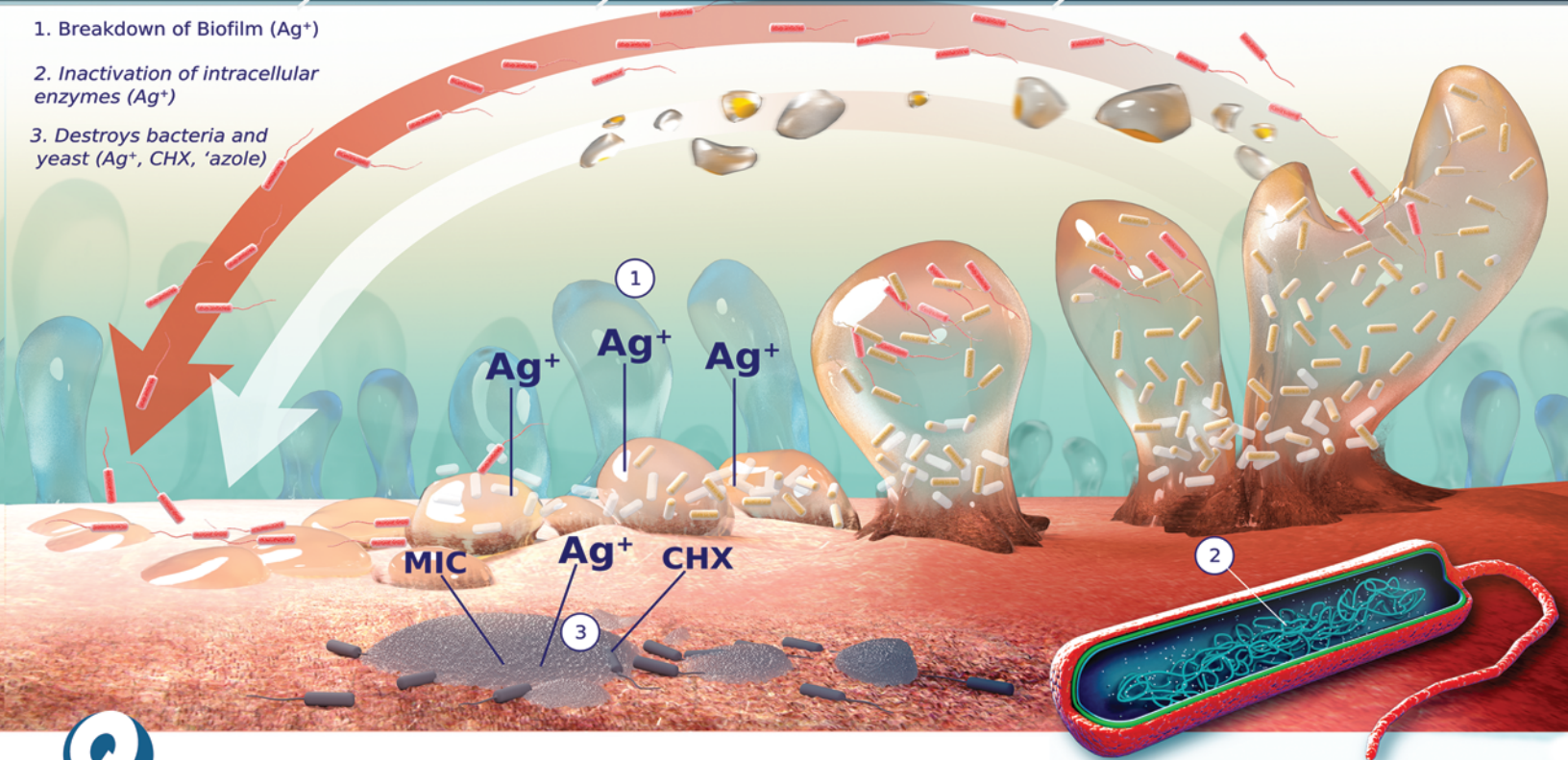
BIOFILM DEVELOPMENT
INFLAMMATORY HOST RESPONSE

SPREADING / SYSTEMIC INFECTION

1. Breakdown of Biofilm (Ag^+)

2. Inactivation of intracellular enzymes (Ag^+)

3. Destroys bacteria and yeast (Ag^+ , CHX, 'azole)



MicroSilver has been used for one decade in various human products. What are the benefits from such an ingredient?

WR = There are different types of silver molecules that primarily vary by the size of silver particles. Currently there are silver salts, nanoparticle and most recently, MicroSilver. In terms of toxicity and in particular regarding concerns related to systemic effects of silver, this is seen mainly with

nanoparticle silver. This is due to the ability of these smaller particles to potentially be absorbed systemically. Besides the size of the silver molecule, the shape of the silver particles also plays a role in the mechanism of action. The bulky shape of the micronized silver, for example, increases the release of Ag^+ ions and it is these ions that have the antimicrobial properties we are interested in. It also gives a high concentration at the skin surface and no significant penetration, so no systemic reactions.

KR = MicroSilver is highly porous and micronized... From 100% pure silver. The key benefit is that these particles are about 10 microns in size... So well above the definition of nano particles (100 nm)... And the MicroSilver will NOT penetrate skin or mucosal tissue and will not be detrimental to the resident skin flora. There are numerous studies showing that micronized Ag does not penetrate the skin.

KR (continued) = Another interesting feature of MicroSilver is that using pure metallic silver particles, you have a reservoir of silver to continuously generate silver ions as they are depleted and this results in very long lasting antimicrobial activity

when compared to silver salts and other silver products. ...It is quite different with silver salts and other silver compounds where ions are released in high quantities (sometime too high), with an immediate peak and then an acute drop...

With micronized Ag, there is a continuous effect, and the porous "sponge-like" morphology of the silver particles physically clings well to skin and hair follicles...

What is the mechanism of action of micronized silver?

WR = The MicroSilver (Ag+) ions also inactivate intracellular enzymes, which further damages the production of protein by the nucleic acids of these bacteria, inhibiting the reproduction of these organisms.

There are many reports supporting the benefits of silver preventing biofilm formation. As far as its ability to disrupt existing biofilms there are reports suggesting this but more research is needed in this area. The proposed mechanism of action of the MicroSilver (Ag+) ions against bacteria is related to its ability to inhibit the transmembrane transport of protein. This results in lysis of the bacterial cell wall.

Can you expand more about micronized silver and eradication of biofilm?

WR = We know that the MicroSilver (Ag+) ions will prevent bacterial adhesion and, if you recall, adhesion is an important component of the biofilm formation.

There is also some indication that Ag+ will destabilize the binding sites of bacteria to proteins.

Most recently VetBiotek sponsored a research project documenting that topical products containing various

concentrations of MicroSilver (Ag+) were effective at eradicating biofilm formation in an established in vitro model for *Staphylococcus intermedius* and *Pseudomonas aeruginosa*.

This research was conducted by an independent laboratory that utilized an established model for biofilm studies. This study will be presented at the World Dermatology Veterinary Congress next May in Bordeaux, France as it was accepted in the supporting original studies session. We are excited about using Ag+ products as we have several clinical cases showing significant improvement with MicroSilver. These are cases that were not responding to multiple treatment regimens.

CG = What was the lowest concentration of MicroSilver that was effective in that study?

WR = It was 0.05% MicroSilver, a relatively low concentration as compared to the current treatment products that are now released which contain a 0.1%.

JA = My experience with the MicroSilver is amazing. It is a radical leap forward in ear therapy. I've treated about 5 total nightmare otitis cases with weekly flush and me applying the micronized silver in clinic.

On cytology I see the particles still present on the swab one week later. Owners are clamoring to be able to take it home.

Cosmetically – no odor. Looks like grey paint in the canal...

MicroSilver has two highly desirable proven properties: Antibacterial and Antibiofilm.

MicroSilver has a highly porous, sponge-like structure. It is produced using a unique and complex process employing only the purest metallic silver.

Thanks to its special biologically active surface structure, MicroSilver is highly effective and safe. Products formulated with MicroSilver have an Antibacterial, regulating and stabilizing effect. Harmful microorganisms are neutralized while the damaged skin is gently repaired with the long lasting residual effect of MicroSilver.

WHAT DOES IT DO?

- Generates silver ions on a continual basis
- Kills gram +ve/ve organisms

Pseudomonas aeruginosa
(normal / multiresistant)
Malassezia pachydermatis
Multi-Resistant *Staphylococcus aureus* (MRSA)
Multi-Resistant *Staphylococcus Pseudintermedius* (MRSP)
Multi-Resistant *Staphylococcus epidermidis* (MRSE)
Streptococcus bovis
Candida albicans
Streptococcus gordonii
Streptococcus mutans
Streptococcus oralis
Streptococcus sanguinis

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