

Innovation for the Management of Ear Infections

EXTRACTED FROM THE ROUND TABLE ON EAR AND SKIN INFECTIONS

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What are the most common treatment regimens in veterinary practice when animals are affected by ear infections?

DG = As a rule, ears are initially treated topically, and systemic antibiotic therapy is reserved for chronic and complicated cases. However, there is a trend towards topical products because of the emerging increase of resistant antimicrobial organisms.

WR = I also think that practitioners are more comfortable using topical therapy for maintenance and prevention of recurrent infections. We are becoming more aware of alternative options to systemic antibiotics especially when dealing with resistant bacteria infections.

DG = Products that also contain ingredients associated with improving epidermal barrier function have become popular in pruritic patients. The development of newer technologies is aiding in increased efficacy of topical products.

What are the most common causes of failure associated with the "classic or current" approaches?

DG = The most common causes of failure are:

- Failure to address or diagnosing the underlying cause

- Inadequate duration of treatment. We increasingly see super resistant bacterial infections in referral practices. **Actually it is somewhat rare for me to see cases of bacterial ear infections that are not associated with bacterial resistance.**

CG = Same for me. About 60 % of ear infections are resistant!

WR = Another cause of failure we should not neglect is client compliance! We can send home the proper treatment and tell clients what to do- but then is it always getting done properly at home? So any therapies that promote better compliance would help increase the response to treatment. Many of our topical treatment regimens that cut frequency of dosing are moving in the right direction.

What is (are) the definition(s) of "biofilm"?

DS = Biofilm is an aggregation of different populations of bacteria. These bacteria live together and create a "community." I like to think of biofilm as a "metropolis" with different species & types of bacteria all living together and all sharing tools to fight whatever aggression is potentially outside. So they secrete material to protect themselves such as polysaccharides; the "slimy material" that we see.

WR = When I think of biofilm, I think of it in a localized site in or on the body, as opposed to it spreading all over the body. It may also be a very important component

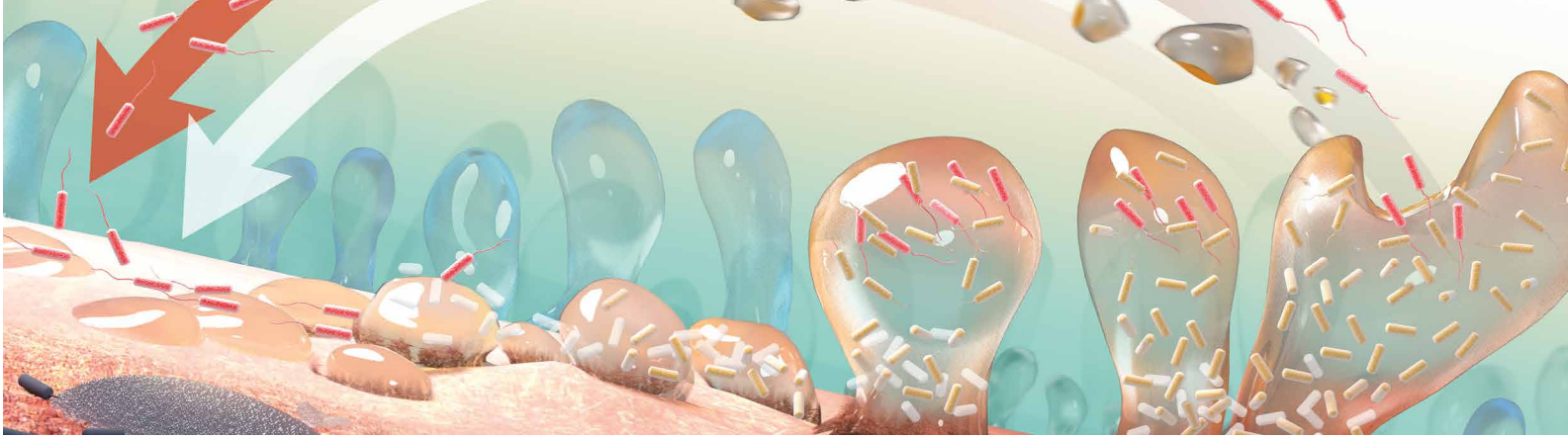
that can contribute to bacterial "resistance". A perfect localized example is biofilms that may occur in ears and contribute to resistant cases of otitis externa or media.

How would you approach a patient with complications by biofilm formation in ear infections?

SW = In terms of ingredients, on the skin, I would use a product that contains chlorhexidine and miconazole at least to kill bacteria and yeast and just the mechanics of it would also help to get rid of the biofilm. In the ears, I would use a combination of a cleanser and a treatment. The cleanser would ideally be a product that would strip off or break off the biofilm. The treatment would be a product that kills the organisms, recognizing that these days several cleansers also have anti-microbial activities.

WR = I agree entirely with Stephen. In the ear, physically cleaning, flushing and removal of purulent debris, but then also following with the addition of various disinfectants that would penetrate and breakdown the biofilm. There are some recent products currently available that contain MicroSilver that seem to act specifically on biofilm prevention. We also know Dr Alan Mundell has been a precursor and he has been using MicroSilver for some time with some great results in dogs with chronic resistant ear infections.





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 pseudintermedius* 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 Ag+ that was effective in that study?

WR = It was 0.05 % Ag+, a relatively low concentration as compared to the current treatment products that are now released.



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

WR = It would appear that the MicroSilver has benefits as a preventative agent for biofilm formation. In addition to shampoo therapy, other delivery systems (i.e., mousse,

gels, lotions or sprays) may be more effective for localized disease.

DS = So molecules like acetylcysteine, EDTA or MicroSilver are able to disrupt the “shield” and open the door to antimicrobial products.

SW = The whole idea is, for example: You have a dog that comes in and is atopic – rubbing its face, licking its feet – and you don’t find much in terms of organisms or just a few. If you have a shampoo with Ag+, you can now tell your client “if you use this product on a routine basis, not only will you be able to take care of any of the infection that takes place now, but you have a good chance to reduce the further incidence of any bacterial infection in relation to atopic dermatitis.”

JA = 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.

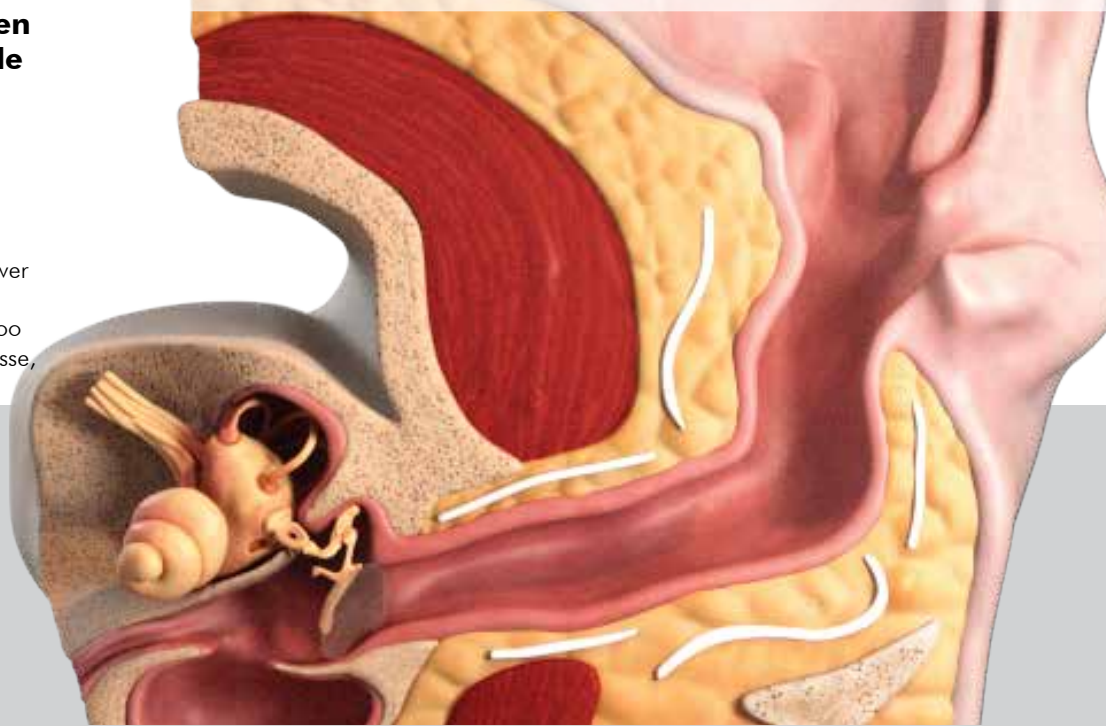
My experience with the MicroSilver is amazing. It is a radical leap forward in ear therapy.

CG = It is not only how you kill the organisms BUT how you prevent resistance from developing. Multi-modal approaches are needed. An organism must have a genetic mutation that works to become resistant. If an organism needs not one but 2 or 3 genetic mutations, it becomes more difficult for that organism to become resistant.

So having for example, miconazole, chlorhexidine, and MicroSilver should be more effective at preventing resistance.

Main features and benefits of micronized silver:

1. Long lasting antimicrobial effect
2. Kills Bacteria and Yeast including Multidrug-Resistant bacteria (MRSA & MRSP)
3. Broad spectrum (gram +/ gram -)
4. Large particle size means no absorption.
5. It remains on the skin - and it will not cause any detrimental harm to the “good flora.”



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