

# MANAGING CHRONICALLY INFECTED EARS



By Naomi Kirby, DVM, MS

One of the most common problems a veterinarian sees is chronic ear infections. Treatment usually includes the use of antibiotics or anti-fungal drugs, or a combination of both – oral or topical.

There are numerous reasons a dog or cat may suffer from recurring infections. They range from anatomical abnormalities and genetic breed predisposition, to environment, lifestyle, antibiotic resistance, allergies, etc. Clinicians seeking alternatives to harsh antibiotics and anti-fungals can use enzymatic-based formulations.

ZYMOX® Otic Solutions utilize the patented LP3 Enzyme System, which is a combination of lactoperoxidase, lysozyme, and lactoferrin. These enzymes have proven antibacterial, anti-fungal and anti-yeast properties<sup>1</sup>. Unlike antibiotics and anti-fungals, this system interacts with the exudate, which produces a by-product and serves as a catalyst; it is therefore critical not to pre-clean the ear prior to application. If cleaning is necessary to evaluate the health of the eardrum, it is recommended to wait at least 24 to 48 hours before applying any ZYMOX Otic Solutions. It is also important not to use these products in conjunction with any other topical ear solutions. There are no contraindications with oral therapeutics.

There are many benefits to using enzymes. They effectively eradicate some of the toughest microbes, without disrupting intestinal flora, and they're easy to use, with no pre-cleaning and a once-daily application.

In addition, bacteria or fungi are unable to develop resistance to the antibacterial activity of the lactoperoxidase system.

The LP3 Enzyme System mode of action includes:

- Disrupting cell wall formation
- Depriving the microbe of iron
- Oxidizing protein sulfhydryl groups and inhibiting bacterial metabolic pathways

There are four ZYMOX products for ears:

1. ZYMOX Otic with 1% Hydrocortisone – for use when inflammation, redness, swelling or itching is present.
2. Advanced Formula ZYMOX Otic Plus with 1% Hydrocortisone – Features additional enzymes to break down the hard-to-penetrate biofilm many resistant microbes produce, such as pseudomonas. Biofilm is the protective slime layer microbes produce to protect its DNA.<sup>2</sup>
3. ZYMOX Otic Hydrocortisone Free: Ideal for maintaining the ear once the infection has resided. It is also the formulation to turn to for pregnant or lactating females, rabbits, small mammals, or reptiles.
4. ZYMOX Ear Cleanser: contains mild plant surfactants in addition to a very mild formulation of LP3 Enzymes. Use for cleaning smelly, dirty ears when infection isn't suspected.



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## EFFECTIVE FOR THE FOLLOWING ORGANISMS

Staphylococcus aureus <sup>1</sup>	E. coli <sup>1</sup>
Malassezia pachydermatitis <sup>1</sup>	Proteus mirabilis <sup>1</sup>
Streptococcus pyogenes <sup>1</sup>	Methicillin-resistant
Candida albicans <sup>1</sup>	Staphylococcus aureus
Pseudomonas aeruginosa <sup>1</sup>	(MRSA) <sup>3</sup>

<sup>1</sup>In vitro Antimicrobial Activity Assessment of Zymox Otic Solution Against a Broad Range of Microbial Organisms". Intern J Appl Res Vet Med, 2003.

<sup>2</sup>"Antibiofilm Efficacy of Advanced Formula Zymox Otic Plus with 1% Hydrocortisone." Intern J Appl Res Vet Med, 2012.

<sup>3</sup>"In vitro Antimicrobial Activity Assessment of Zymox Against Methicillin-Resistant Staphylococcus aureus (MRSA)". Intern J Appl Res Vet Med, 2010.