



# Antimicrobial enzymes – an effective alternative to **ANTIBIOTICS**



BY ANN BRIGHTMAN  
WITH DEBORAH BROWN

**S**ir Alexander Fleming's discovery of penicillin nearly 85 years ago changed the world of medicine forever. Since then, antibiotics have saved millions of lives worldwide. But there's a new problem – the growing proliferation of antibiotic-resistant superbugs.

The declining effectiveness of antibiotics is caused primarily by their overuse in both human and veterinary medicine. Antibiotics are frequently prescribed for a range of conditions in dogs, cats and other animals, from ear infections and skin allergies to gastrointestinal upsets, urinary tract infections, periodontal disease and more. While these drugs are often crucial for dealing with acute conditions, too many antibiotics often cause the bacteria to become resistant to the medication, rendering it ineffective. Another culprit of drug-resistance involves clients failing to follow veterinary directions for administering antibiotics (e.g. stopping the medication before the full course has been used, and starting it up again days or weeks later when/if the infection returns).

When attacked by antibiotics, bacteria adapt swiftly to survive. They do this in a variety of ways – by swapping genetic information; altering their own cell structure to make them impenetrable to the drug; or even excreting the antibiotic from the cell before it can do any damage. Many superbugs also have the capacity to survive for long periods on living and non-living surfaces (from door handles to a

pet's skin) by forming a biofilm, thereby greatly enhancing their ability to spread.

Antimicrobial enzymes are a key weapon in the battle against many disease-causing microbes. "The quest to destroy biofilms is becoming a priority and enzymes – in certain combinations – are offering hope," says Deborah Brown of PKB Animal Health. "While bleach may destroy biofilm on objects it's unrealistic to use bleach on the body.

"There is evidence that enzymes have antimicrobial effectiveness, are selective with their lock-n-key feature and only target the offending organism without disruption to friendly bacteria," adds Ms. Brown. "Antibiotics attack both good and bad bacteria and are non-selective." Bacteria cells don't form a memory against enzymes, so they can destroy antibiotic-resistant microorganisms.

The patented LP3 Enzyme System used in PKB Animal Health's line of Zymox ear, skin, wound and infection care solutions ([pkbanimalhealth.com](http://pkbanimalhealth.com)), features a combination of three key antimicrobial enzymes – lactoperoxidase, lactoferrin and lysozyme.

Given how well antimicrobial enzymes work against antibiotic-resistant bacteria, they surely merit a frontline role in the war against superbugs.