

Antibiotic-induced Enteritis and Enterotoxemia

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Why must your veterinarian take care when choosing antibiotics for use in a rabbit, and which antibiotics are not recommended for use in a rabbit?

Many antibiotics suppress the healthy population of intestinal bacteria (flora) resulting in "dysbiosis" (meaning upset bacterial flora) which leads to "enteritis" or "enterotoxemia," and/or diarrhea and can potentially take the life of a rabbit. Disease is caused when an overgrowth of disease-causing bacteria produce toxins and damage the cecum and colon, as well as affecting other body systems. Clostridium spiroforme, a bacterium normally present in the rabbit's lower intestinal tract in very small numbers, is the most common cause, and produces a toxin similar to the toxin that causes botulism food poisoning. E. Coli and other pathogenic bacteria, which may also proliferate and be the cause of disease.

Not all antibiotics are a problem; rather, only those that affect the "normal" bacteria that populate the rabbit's lower intestinal tract. These antibiotics typically kill the normal, healthy bacteria in the rabbit's cecum and colon. Most of these "healthy" bacteria are classified as "Gram positive bacteria" and/or the bacteria that grow in the absence of oxygen (anaerobic bacteria).

The chance of the antibiotic causing enteritis or enterotoxemia is greater if it is administered orally, rather than by injection.

A diet rich in simple carbohydrates (sugars, starches such as grain and refined flour, as well as high-sugar-containing fruits such as grapes or bananas) will increase a rabbit's chance of developing enteritis when taking antibiotics. This is because of the destabilizing effect simple carbohydrates have on the normal bacteria and because Clostridium spiroforme needs simple carbohydrates to produce its toxin. A diet high in fiber, such as grass hay, will decrease the chance of antibiotics upsetting the rabbit's flora because the fiber increases the motility (motion) of the cecum and colon.

Antibiotics in the macrolide family, such as clindamycin, erythromycin and lincomycin; the penicillin family, such as ampicillin and amoxicillin, as well as several other antibiotics have been reported to cause enteritis in rabbits. Less likely, but capable of causing problems is the cephalosporin family of antibiotics. Antibiotics that rarely if ever cause problems include the quinolone family, such as enrofloxacin (Baytril); the potentiated sulfa drugs, such as trimethoprim-sulfamethoxazole; sulfa drugs such as sulfadimethoxine; and the aminoglycoside antibiotics such as amikacin.

Signs that a rabbit has enteritis include one or more of the following symptoms: anorexia (not eating or drinking), depression or lethargy, abdomen distended with gas, abdominal pain and diarrhea with or without blood, or even no stool production.

Treatment of enteritis and enterotoxemia consists of aggressive supportive care and efforts to increase cecal and colonic motility, and to discourage the growth of pathogenic bacteria and the production of

toxins while supporting the growth of normal flora. Correction of dehydration and maintenance of normal hydration are of paramount importance. Intravenous or intraosseous fluids are often indicated. Motility stimulating drugs such as metaclopramide HCl (Reglan) and a diet high in fiber, force fed if necessary, give the most favorable results in the author's experience. Cholestyrene, an ion-exchange resin capable of binding bacterial toxins, has been used with very good results. Antibiotics have limited value in treating the disease and are used primarily as "supportive" therapy.

Prevention of enterotoxemia depends on maintaining optimal husbandry and minimizing stress. Feed a diet with no less than 18% to 20% fiber from a good quality grass hay. Sudden changes in the diet should be avoided. Weaning rabbits should have feed, including hay, available from three weeks of age, and early or forced weaning should be avoided.