

Aureomycin® for Anaplasmosis Control — The Practical, Convenient, Economical Choice

Anaplasmosis – Serious Systemic Disease

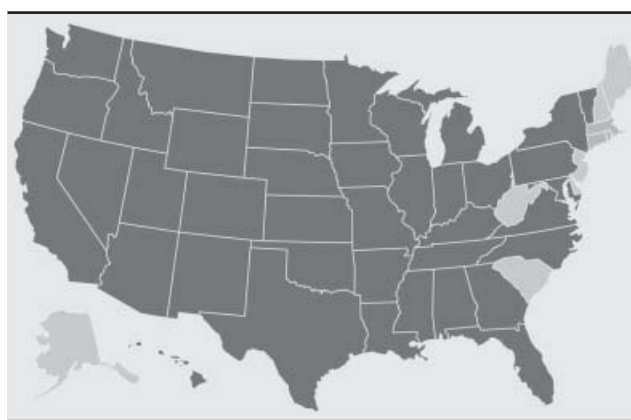
Anaplasmosis in cattle is caused by *Anaplasma marginale*, a rickettsial pathogen that invades red blood cells. The host animal begins to destroy (phagocytize) the infected cells, resulting in a rapid reduction of circulating red blood cells. After a significant level of phagocytosis has occurred, the diseased animal may show signs of anemia, jaundice and fever.

Anaplasmosis is spread by the transfer of blood from an infected animal to a susceptible animal. Transmission can be biological or mechanical. Ticks are a good biological vector as the *Anaplasma* organism can survive in ticks for a long time. Biting insects such as horse flies, stable flies and mosquitoes can transmit the organism mechanically as can *Anaplasma*-contaminated, reused needles and dehorning instruments. Left uncontrolled, anaplasmosis can spread to all naïve animals resulting in a potentially devastating outbreak. Other factors contributing to outbreaks include the number of carriers and the amount of vector transference.

Cattle of all ages may become infected with the severity of the infection increasing with age. In cattle under 12 months of age only a mild illness may be noticed but the animals become a carrier for life. Cattle greater than 2 years of age show the most severe disease where mortality rates can reach 50% if left untreated. Annual economic loss to the cattle industry caused by anaplasmosis has been reported in excess of \$100 million.¹ These costs are a compilation of death losses, lowered productivity, decreased milk production, and reproductive disorders.

In the past anaplasmosis was commonly thought of as a disease of southern cattle. However, as the industry has become more global and interstate movement of cattle has become more common, the disease is no longer just

FIGURE 1: Anaplasmosis is no longer just a regional problem, but is routinely diagnosed nationwide (dark areas).



a regional problem (Figure 1). Today the incidence is much more nationwide and is routinely diagnosed outside the traditional anaplasmosis endemic areas.

Anaplasma vaccines previously available have been withdrawn from the market as a result of side-effects and efficacy issues. Currently, the only available vaccine is a modified live vaccine licensed for use in California for animals less than 1 year of age. In addition, vaccinated animals may show a positive reaction to diagnostic tests, complicating export, interstate movement of animals and eradication of the organism.

Aureomycin in the Feed to Control Anaplasmosis

Aureomycin is a broad spectrum antimicrobial approved in the US for the control of anaplasmosis (Table 1), in addition to being active against a wide variety of gram-positive and gram negative bacteria, spirochetes, rickettsia, protozoa, and chlamydia. Studies have shown that Aureomycin is effective (at 0.5 mg/lb body weight) not only in prevent-

TABLE 1. Uses of Aureomycin for control of anaplasmosis in beef cattle.

Aureomycin in the feed is approved for control of the active infection of anaplasmosis caused by *Anaplasma marginale* susceptible to chlortetracycline in beef cattle as follows:

- Beef cattle weighing less than 700 lb: feed Aureomycin at the level of 350 mg/head/day.*
- Beef cattle weighing more than 700 lb: feed Aureomycin at the rate of 0.5 mg/lb body weight/day.*

* Zero-day withdrawal.

ing death losses² due to anaplasmosis, but also in controlling the infection in carrier animals, preventing the spread of the disease.³

Oxytetracycline, the other commercially available “tetracycline” antibiotic, does not have an approved anaplasmosis claim for feed use. *Anaplasma marginale*, the causative agent of anaplasmosis, is an intracellular pathogen. Cellular membranes consist of fatty substances, and research has demonstrated that chlortetracycline has greater lipid solubility than oxytetracycline. Therefore, one might expect that chlortetracycline would deliver more drug to the *A. marginale* pathogens and, therefore, be a more effective antimicrobial than oxytetracycline.

Feeding Trials Show the Benefits of Anaplasmosis Control

Numerous studies have been conducted with Aureomycin in pasture cattle for control of anaplasmosis. Five university trials were conducted with cows and their suckling calves. The pairs had access to either a medicated (Aureomycin) or non-medicated salt/mineral mix during some or all of the grazing season. Researchers noted that calves suckling cows with access to the medicated mix had increased weaning weights (Table 2).

Experiments have also been conducted with replacement heifers receiving either medicated (Aureomycin) or non-medicated supplements or salt/mineral mixes for the control of anaplasmosis. In these studies, the feeds were available approximately 30 days prior to breeding in all three studies, and for 30 days post-initiation of breeding in experiment 3 (Table 3). Replacement heifers receiving the

TABLE 2. Five university trials of Aureomycin-supplemented cows suckling calves.*

Trial	> weaning weight (lb)
Kansas	22
Kentucky	26
Nebraska	12
North Carolina	32
North Dakota	16

* Level of Aureomycin at anaplasmosis control level; 1992 Kuhl et al.⁴

TABLE 3. Aureomycin fed to heifers for anaplasmosis control.*

Experiment	Pregnancy rate	Significance
Exp. 1 ⁵	+ 12.1%	$P < 0.007$
Exp. 2 ⁶	+ 14.7%	$P < 0.01$
Exp. 3 ⁷	+ 12.0%	$P < 0.03$

* Heifers received Aureomycin for 30 days prior to breeding at 350 mg/day, 1.1 mg/kg, and 50-125 mg/day respectively.
⁵ Rae et al. 1993; ⁶ Saltman et al. 1998; ⁷ Rae et al. 2002

medicated mix had significantly higher pregnancy rates in all three studies as compared to heifers receiving the non-medicated feed.

Feeding Aureomycin is the practical, convenient, economical method for controlling anaplasmosis in the herd. Feed manufacturers offer a variety of feeds, and free choice minerals and blocks containing this broad-spectrum antimicrobial.

Summary

- Aureomycin is approved for administration in the feed to control anaplasmosis in beef cattle (refer to Table 1).
- Aureomycin in the feed is the practical, convenient, economical way to control anaplasmosis in the herd.
- With Aureomycin in the feed for anaplasmosis control, there is no need for monthly injections during the vector season.
- Cattle can receive Aureomycin right up to slaughter; no withdrawal period is required.

Literature Cited

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