

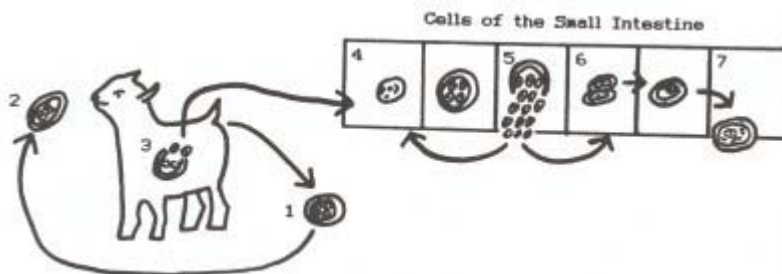
## Coccidiosis: Understanding the Drugs Available for Control

by N. Galen Walters, DVM

Most Pygmy goat owners are aware that coccidiosis is a lurking condition always awaiting the opportunity to become a full-blown disease in their herds. Many understand that “treatment” is a matter of controlling rather than eradicating the condition, but few realize that several treatment choices are available, each appropriate to specific stages in the life cycle of the organism. This becomes useful information when owners are faced with attempting to treat an outbreak of disease or trying to prevent one. The following schematic life cycle of coccidia will help clarify where the various drugs available for treatment have their effect.

### STEPS OF DEVELOPMENT OF COCCIDIA

- 1 - Oocyst (egg) contaminates the environment via feces from an infected animal.
- 2 - After the oocyst matures in the soil (1-7 days) to become an infective sporocyst stage, a susceptible Pygmy ingests it.
- 3 - Sporocyst bursts open inside the internal lumen and releases sporozoites.
- 4 - Sporozoites enter internal cells and multiply, producing thousands of merozoites.
- 5 - Merozoites rupture from intestinal cell walls and enter more intestinal cells.
- 6 - Merozoites unite to eventually form an oocyst which will be released from the intestinal cell wall and be passed out via feces.
- 7 - Oocysts rupturing from intestinal wall and passed via the feces.



The three most commonly available drugs (coccidiostats) for use in goats are Sulfa drugs, Amprolium (Corid®), and Decoquinatate (DeccoX®). Sulfa drugs are the only drugs actually labeled for use in goats.

### IMPORTANT POINTS TO KEEP IN MIND

- All drugs available are only effective in reducing numbers produced; they do not directly kill the organism.
- Clinical disease occurs as a direct result of intestinal cell wall damage and most during the merozoite stage, 14-20 days after initial ingestion.
- Goats have the ability to develop an active immunity against coccidia which

generally requires ten days to develop. Medication helps slow down the organisms' multiplication long enough for the animal to develop this immunity.

- Immunity may be overridden by massive exposure to oocysts.
- Epidemics occur when:
  - Resistance is decreased due to stress (feed changes, crowding)
  - There is an increased exposure to oocysts, massive contamination, poor cleanliness, accumulation of feces, crowding.
  - Susceptible (young) animal is introduced to a contaminated area – too young to have developed an immunity.
- Coccidiosis is a self-limiting infection provided the animal is not reinfected, i.e., once the organism completes its life cycle, it is shed.
- Control of the infective cycle is the key in prevention (oocysts in feces and in environment for greater than 7 days).
- Environmental factors in control:
  - Complete dryness or exposure to direct sunlight is lethal to oocysts.
  - Infection stage takes 1-7 days to develop from time oocysts pass in feces.
  - Optimum temperature for the development of oocysts is 68-73°F. Few develop below 32-40°F, but oocysts can survive for up to 8 months as low as 6°F.

## **SULFA DRUGS**

- Mode of action: Reduces numbers of organisms at the end of the life cycle, steps 5-6, the merozoite stage.
- Effective time to use: When you actually see clinical outbreaks of disease.
- Disadvantages: Because effect is late in the cycle, intestinal damage may already be extensive. Can be toxic at wrong dosage.
- Advantages: Helps prevent secondary bacterial infections.
- Treatment: Sulfamethazine (poultry prep) added to water or milk at 60 mg/lb per day. Treat kids at 3-4 weeks of age for 7 days and repeat in 3 weeks. May have to treat at 21-day cycles through 3 weeks post-weaning.

## **AMPROLIUM (Corid®)**

- Mode of action: Acts early in the life cycle, steps 4-5.
- Effective time to use: The choice to use when you are already in a known contaminated area and/or just beginning to see clinical disease.
- Disadvantages: Interferes with thiamine utilization in the coccidia organism, hence retards their growth and multiplication. Thought to make the host thiamine deficient as well. May need to supplement with thiamine.
- Treatment: Have to start kids at 2 weeks old. 25-30 mg/lb for 10 days or 15-30 mg/lb for 21 days. Repeat in 3 weeks.

## **DECOQUINATE (Deccox®)**

- Mode of action: Effective in reducing numbers very early in the life cycle, steps 3-5, the sporozoite stage.
  - Effective time to use: Best used any time you move susceptible animals into an infected area. First day they enter then area, put in the ration.
  - Advantages: Works well as a preventative and treatment before marked intestinal wall destruction takes place.
  - Treatment: Start at 2 weeks old and use for 28 continuous days.  $\frac{1}{4}$  mg/lb. In older kids and adults, offer free choice in granulated salt, mixed at the rate of 2 lbs. of 6% Deccox premix in 50 lbs. of salt.
- 

Excerpts from:

Kinne, Maxine, ed. [Pygmy Goats: Best of Memo 2 \(1982-1987\)](#)

National Pygmy Goat Association: pp 118-119

This document is for informational purposes only and is in no way intended to be a substitute for medical consultation with a qualified veterinary professional. The information provided through this document is not meant to be used in the diagnosis or treatment of a health problem or disease, nor should it be construed as such.