Antihelmintics (Dewormers) for Sheep and Goats

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Topics

- Products licensed in Canada
- Types of dewormers and their uses
- Recommended dosages
- Routes of administration
- Clicker questions
Product Licensing in Canada

- *Ivomec* is the only product licensed for use in sheep in Canada.
- No products are licensed in goats.
- Veterinarians must prescribe.
- Need to take care with safety and withdrawal times.
- Need to have a relationship with your veterinarian.
Veterinarian-Client-Patient Relationship (VCPR)

• A relationship that must be met by a veterinarian prior to any therapy being administered to animal(s). A valid VCPR requires: that the veterinarian takes responsibility for medical and treatment judgments for the animal(s) and that the client agrees to follow the veterinarian's instructions; that the veterinarian has close knowledge of the animal(s) and their medical condition obtained by examination and premise visit; that the veterinarian be available for follow up visits or has emergency coverage in the event of adverse reactions or failure of the treatment regimen.
Types (Families) of Dewormers
#1. Benzimidazoles (BZ)

- Fenbendazole, Albendazole, Oxbendazole
  - E.g. Safeguard, Panacur, Valbazen
- “White Drenches”
- Given orally, safe
- Effective against all GIN & tapeworms
  - Also ovicidal (active against eggs)
- Use cattle dose in sheep
  - Double dose in goats
Benzimidazoles (BZ)

• Albendazole (Valbazen) has activity against adult flukes
  – Do not use during breeding or the first months of pregnancy
#2. Levamisole (LV)-type products*

- Levamisole, pyrantel, morantel
  - *E.g. Tramisol (not marketed anymore)*
- Effective against adult worms & lungworm
- Does not work well against larval forms & eggs
- Ineffective against tapeworms & flukes
- Can be compounded
- Potentially toxic

*Imidazothiazoles and tetrahydropyrimidines*
#3. Macrolytic Lactones (ML)

- Avermectin, Doramectin, Eprinomectin, Milbemycins
  - *E.g. Ivomec, Cydectin*
- Works well against adult forms of GIN and L4
- Not effective against tapeworms or flukes
- Effective against sucking lice, mites, keds and nose bots
- Safe but long withdrawal periods
  - Ivomec 15 days meat for drench, 35 days for injectable
#3. Macrolytic Lactones (ML)

- Milbemycins
  - *Cydectin*
- Truly long-acting
  - 35 days as an injection
  - 21 days as a drench
- Advantages and disadvantages
  - Very long withdrawal periods
  - Promotes resistance?
#4. Amino-acetonitrile Derivatives (AAD)

- Monepantel
  - *E.g. Zolvix – Novartis (not marketed here yet)*
- First new class of anthelmintics in 25 years
- Activity against resistant strains of GIN & immature forms, in sheep at 2.5 mg/kg
- Effective in goats 3.75 mg/kg
Combination products

• Not available here, but used in other countries
  – 2- and 3-way combination products
  – Startec (derquantel + abamectin)

• Modeling suggests they are useful in delaying onset of resistance to any one family

BZ / ML / LV Combo
## Activity of Anthelmintics Against Different Parasite Classes

<table>
<thead>
<tr>
<th></th>
<th>Benzimidazoles</th>
<th>Avermectins</th>
<th>Moxidectin</th>
<th>Levamisole</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypobiotic Larvae</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>+/-</td>
</tr>
<tr>
<td>Persistent Activity</td>
<td>-</td>
<td>+/-</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Tapeworms</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>External Parasites</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Liver Flukes</td>
<td>+/- *</td>
<td>-</td>
<td>-</td>
<td>-</td>
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</tbody>
</table>

+ = good activity; ++ = much activity; - = no activity; +/- = slight activity

* = albendazole has activity against adult flukes but only at double-dose (10 mg/kg bw sheep)

Benzimidazole = fenbendazole and albendazole

Avermectin = ivermectin, doramectin, eprinomectin
## Recommended* Dosages

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Sheep</td>
<td>5 mg/kg bw</td>
<td>0.2 mg/kg bw</td>
<td>0.2 mg/kg bw</td>
<td>7.5 mg/kg bw</td>
</tr>
<tr>
<td>Goat</td>
<td>10 mg/kg bw</td>
<td>0.3 mg/kg bw</td>
<td>0.4 mg/kg bw</td>
<td>12 mg/kg bw</td>
</tr>
</tbody>
</table>

*Based on licensed recommendations from other countries where the drug is approved, or from the literature. Please note, anthelmintics not approved for that species should only be used on the advice of a licensed veterinarian and with a valid veterinary-client patient relationship.

Milk and meat withdrawal periods may differ from label for cattle. Your veterinarian should consult with CgFARAD or SRVO for appropriate withdrawal periods.
Routes of Administration

• Drench versus injection
  – Injections can result in prolonged action
    • May increase effectiveness initially, but lead to resistance and residues
  – Oral treatments are ALWAYS preferred

• Pour-ons
  – Not well-absorbed in sheep and goats – AVOID
  – Using pour-ons as oral drenches – results unpredictable