University of Idaho Extension
www.uidaho.edu/extension/4h

Internal Parasites

Shannon Williams, Extension Educator

Goal (learning objective)

Youth will:

- Learn about common livestock internal parasites
- Learn about parasite control options
- Learn about vocabulary related to parasites

Supplies

- Handout 1 – Ivomec (enough copies for group)
- Handout 2 – Safeguard (enough copies for group)
- Handout 3 - Cydectin (enough copies for group)
- Worm life cycle (1 copy)

Pre-lesson preparation

- Read/review the list of external parasites for specific species (see resources below)
- Make copies of the Handouts
- Familiarize yourself with the signs and symptoms an animal will exhibit when suffering from specific internal parasites
- Practice lesson

Lesson directions and outline

Ask the youth to share some types of internal parasites they are aware of. Have the youth define what a parasite does. After the youth share their answers discuss the following information:

All livestock are exposed to internal parasites, especially in a corral or pen situation. Infection with internal parasites is usually acquired by ingestion of egg-forms of a parasite. Internal parasites live inside the body of the host and then are passed through the body in the manure to finish their life cycle. They can then be ingested by another animal. Parasites may cause reduced weight gain, poor appetite, diarrhea and other health problems. The best prevention is to reduce your animals' exposure to parasites by providing a clean environment (beginning at birth) and avoiding overcrowding of pens or premises. If possible, avoid pasturing or housing in damp areas and when possible rotate pastures or housing areas to avoid high burdens of parasites. There are also several products available for control of internal parasites, but a good biosecurity plan helps reduce the number of internal parasites. Consult your local veterinarian for advice in establishing an effective plan.

Examples of internal parasites in livestock include:

- SHEEP: The most common internal parasites of sheep include stomach and intestinal worms. Noticeable symptoms of parasites include poor weight gain, depression, listlessness, broken wool, and whiteness (anemia) around the eyes and gums. In advanced stages, a large swelling forms under the jaw, sometimes called "bottle jaw". Most of the damage caused by internal parasites is due to mechanical irritation of the tissue they affect and the obstruction of an organ when there are too many worms. The ability and tendency of sheep to graze close to the ground where larvae numbers are high, drastically increases their exposure to parasites.

- BEEF: The most common internal parasites of cattle include stomach and lung worms, although there are many species of worm parasites that can affect them. Liver flukes, tapeworms, and single-celled protozoan parasites called Coccidia can also be very prevalent in beef cattle. Most of the internal parasites in cattle are found in the abomasum (true stomach) or the small intestine. These parasites can cause anemia, scouring, depression, indigestion, poor appetite, loss of weight, and decreased milk production for cows. Cattle of all ages, but particularly young cattle, are normally affected.
- GOATS: The common internal parasites include lungworms, stomach worms, tapeworms and coccidian. Noticeable symptoms of parasites can be poor weight gain, poor appetite, depression, listlessness and bloody scours. Goats of all ages can be affected but young and poorly nourished animals are affected the most by internal parasites. Good management and proper sanitation can reduce parasite infestation.
- SWINE: The most common internal parasites that infect pigs are roundworms, stomach worms, lung worms, thread worms, and kidney worms. Each of these worms affects different ages of pigs from 10 day old pigs to older hogs and breeding stock. These internal worms can cause bloody diarrhea, liver damage, outright illness, decreased appetite, and poor digestion. It is of utmost importance to have a good deworming program to prevent spread of internal parasites. Depending on the species, a single female can lay up to one million eggs in one day. These eggs can remain viable in the environment for up to thirty years. They can become infective 10 days after being laid.

It is always a good management practice to consult with a licensed veterinarian to develop an effective internal parasite management program.

Conducting the activity (DO)

1. Discuss the various internal parasites and their life cycles.
2. Review the labels of the products available for control.
3. Have youth report which parasites are controlled with each product. How is the product administered? What is the withdrawal time?
4. Discuss what biosecurity measures they can take to reduce the number and incidence of internal parasites.

What did we learn? (REFLECT)

- Ask: What internal parasites is your project animal susceptible to?
- Ask: Which product can use you and meet the withdrawal time for your market animal sale?
- Ask: What biosecurity measures can you take to reduce the chance of your animal having internal parasites?

Why is that important? (APPLY)

- Ask: Why is it important for us to control internal parasites on our 4-H animals?
- Ask: Why is biosecurity important?
- Ask: Why is it necessary to read the entire label before you administer a product to your animal?

Resources

Ohio State University Extension. (2011). Health Maintenance. *Beef resource handbook* (pages 5-2 through 5-4).

Ohio State University Extension. (2008). Herd Management and Diseases. *Goat resource handbook* (pages 88-89).

Ohio State University Extension. (2011). Health Maintenance and Diseases. *Sheep resource handbook for market and breeding projects* (pages 68).

Ohio State University Extension. (2000). Diseases & Their Control. *Swine resource handbook for market and breeding projects* (pages 9-10 through 9-12).

Published February, 2020

IVOMEC®1% INJECTION FOR CATTLE AND SWINE

Merial

(ivermectin)

NADA 128-409, Approved by the FDA 67306, 67307, 67308, 67309

1% Sterile Solution

A Parasiticide for the Treatment and Control of Internal and External Parasites of Cattle and Swine Consult your veterinarian for assistance in the diagnosis, treatment and control of parasitism.

INTRODUCTION

IVOMEC® (ivermectin) is an injectable parasiticide for cattle and swine. One low-volume dose effectively treats and controls the following internal and external parasites that may impair the health of cattle and swine: gastrointestinal roundworms (including inhibited *0stertagia ostertagi* in cattle), lungworms, grubs, sucking lice, and mange mites of cattle; and gastrointestinal roundworms, lungworms , lice, and mange mites of swine. Discovered and developed by scientists from Merck Research Laboratories, ivermectin is a novel chemical entity. Its convenience, broad-spectrum efficacy, and safety margin make IVOMEC Injection a unique product for parasite control of cattle and swine.

PRODUCT DESCRIPTION

Ivermectin is derived from the avermectins , a family of potent, broad-spectrumantiparasitic agents isolated from fermentation of *Streptomyces avermitilis* .

IVOMEC Injection is a clear, ready-to-use, sterile solution containing 1% ivermectin, 40% glycerol formal, and propylene glycol, q.s . ad 100%. IVOMEC Injection is formulated to deliver the recommended dose level of 200 mcg ivermectin/kilogram of body weight in cattle when given subcutaneously at the rate of 1 ml/110 lb (50 kg). In Swine, IVOMEC Injection is formulated to deliver the recommended dose level of 300 mcg ivermectin/kilogram body weight when given subcutaneously in the neck at the rate of 1 ml per 75 lb (33 kg).

MODE OF ACTION

Ivermectin is a member of the macrocyclic lactone class of endectocides which have a unique mode of action. Compounds of the class bind selectively and with high affinity to glutamate-gated chloride ion channels which occur in invertebrate nerve and muscle cells. This leads to an increase in the permeability of the cell membrane to chloride ions with hyperpolarization of the nerve or muscle cell, resulting in paralysis and death of the parasite . Compounds of this class may also interact with other ligand -gated chloride channels, such as those gated by the neurotransmitter gamma-aminobutyric acid (GABA).

The margin of safety for compounds of this class is attributable to the fact that mammals do not have glutamate-gated chloride channels, the macrocyclic lactones have a low affinity for other mammalian ligand-gated chloride channels and they do not readily cross the blood-brain barrier.

INDICATIONS

Cattle: IVOMEC Injection is indicated for the effective treatment and control of the following harmful species of gastrointestinal roundworms, lungworms, grubs, sucking lice, and mange mites in cattle:

Gastrointestinal Roundworms (adults and fourth-stage larvae):

0stertagia ostertagi (including inhibited 0. *ostertagi)*
0. *lyrata*
Haemonchus
placei
Trichostrongyl
us axei
T. colubriformis
Cooperia oncophora
C. *punctata*
C. *pectinata*
0esophagostomum
radiatum
Bunostomumphleb
otomum
Nematodirus helvetianus (adults only)
N. spathiger (adults only)

Lungworms (adults and fourth-stage larvae):
Dictyocaulus viviparus

Cattle Grubs (parasitic stages):
Hypoderma bovis
H. lineatum

Sucking Lice:
Linognathus vituli
Haematopinus
eurystemus
Solenopotes
capillatus **Mites**
(scabies):
Psoroptes ovis (syn. *P. communis* var. *bovis)*
Sarcoptes scabiei var. *bovis*

Persistent Activity

IVOMEC Injection has been proved to effectively control infections and to protect cattle from reinfection with *Dictyocaulus viviparus* and *Oesophagostomum radiatum* for 28 days after treatment; *Ostertagia ostertagi, Trichostrongylus axei* and *Cooperia punctata* for 21 days after treatment; *Haemonchus placei* and *Cooperia oncophora* for 14 days after treatment.

Swine: IVOMEC Injection is indicated for the effective treatment and control of the following harmful species of gastrointestinal roundworms, lungworms, lice, and mange mites in swine:

Gastrointestinal Roundworms:

Large roundworm, *Ascaris suum* (adults and fourth-stage larvae)
Red stomach worm, *Hyostrongy/us rubidus* (adults
and fourth-stage larvae) Nodular worm,
Oesophagostomum spp. (adults and fourth-stage
larvae) Threadworm, *Strongyloides ransomi*
(adults)

Somatic Roundworm Larvae:

Threadworm, *Strongyloides ransomi* (somatic larvae)
Sows must be treated at least seven days before farrowing to prevent infe ction in piglets.

Lungworms:

Metastrongy/us spp. (adults)

Lice:

Haematopinu s suis

Mange Mites:

Sarcoptes scabiei var. *suis*

DOSAGE

Cattle: IVOMEC Injection should be given only by subcutaneous injection under the loose skin in front of or behind the shoulder at the recommended dose level of 200 mcg of ivermectin per kilogram of body weight. Each ml of IVOMEC contains 10 mg of ivermectin, sufficient to treat 110 lb (50 kg) of body weight (maximum 10 ml per injection site).

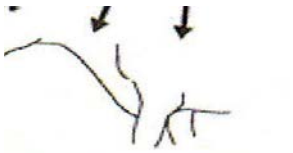
Body Weight (lb)	Dose Volume (ml)
220	2
330	3
440	4
550	5
660	6
770	7
880	8
990	9
1100	10

Swine: IVOMEC Injection should be given only by subcutaneous injection in the neck of swine at the recommended dose level of 300 mcg of ivermectin per kilogram (2.2 lb) of body weight. Each ml of IVOMEC contains 10 mg of ivermectin, sufficient to treat 75 lb of body weight

	Body Weight (lb)	Dose Volume (ml)
Growing Pigs	19	1/4
	38	1/2
	75	1
	150	2
Breeding Animals (Sows, Gilts, and Boars)	225	3
	300	4
	375	5
	450	6

ADMINISTRATION

Cattle: IVOMEC Injections to be given subcutaneously only, to reduce risk of potentially fatal clostridial infection of the injection site.



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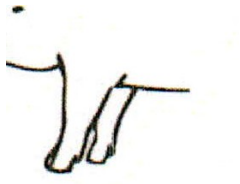
Animals should be appropriately restrained to achieve the proper route of administration. Use of a 16-gauge 1/2" to **1/4"** needle is suggested. Inject under the loose skin in front of or behind the shoulder (see illustration).

When using the 200, 500 or 1000ml pack size, use only automatic syringe equipment.

Use sterile equipment and sanitize the injection site by applying a suitable disinfectant. Clean, properly disinfected needles should be used to reduce the potential for injection site infections.

No special handling or protective clothing is necessary.

Swine: IVOMEC® (ivermectin) Injection is to be given subcutaneously in the neck. Animals should be appropriately restrained to achieve the proper



n using the 200 mL

route of administration. Use of a 16- or 18-gauge needle is suggested for sows and boars, while an 18- or 20-gauge needle may be appropriate for young animals. Inject under the skin, immediately behind the ear (see

illustration).

When using the 200 ml, 500 ml or 1000 ml pack size, use only automatic syringe equipment. As with any injection, sterile equipment should be used. The injection site should be cleaned and disinfected with alcohol before injection. The rubber stopper should also be disinfected with alcohol to prevent contamination of the contents. Mild and transient pain reactions may be seen in some swine following subcutaneous administration.

Recommended Treatment Program

Swine: At the time of initiating any parasite control program, it is important to treat all breeding animals in the herd. After the initial treatment, use IVOMEC Injection regularly as follows:

BREEDING ANIMALS

Sows: Treat prior to farrowing, preferably 7-14 days before, to minimize infection of piglets.

Gilts: Treat 7-14 days prior to breeding. Treat 7-14 days prior to farrowing.

Boars: Frequency and need for treatments are dependent upon exposure. Treat at least two times a year.

FEEDER PIGS

(Weaners/Growers/Finishers)

All weaner/feeder pigs should be treated before placement in clean quarters. Pigs exposed to contaminated soil or pasture may need retreatment if reinfection occurs.

NOTE:

(1) IVOMEC Injection has a persistent drug level sufficient to control mite infestations throughout the egg to adult life cycle. However, since the ivermectin effect is not immediate, care must be taken to prevent reinfestation from exposure to untreated animals or contaminated facilities. Generally, pigs should not be moved to clean quarters or exposed to uninfested pigs for approximately one week after treatment. Sows should be treated at least one week before farrowing to minimize transfer of mites to newborn baby pigs.

(2) Louse eggs are unaffected by IVOMEC Injection and may require up to three weeks to hatch. Louse infestations developing from hatching eggs may require retreatment.

(3) Consult a veterinarian for aid in the diagnosis and control of internal and external parasites of swine.

Special Minor Use

Reindeer: For the treatment and control of warbles *(Oedemagenatarandi)* in reindeer, inject 200 micrograms ivermectin per kilogram of body weight, subcutaneously. Follow use directions for cattle as described under **ADMINISTRATION.**

American Bison: For the treatment and control of grubs *(Hypodermabovis)* in American bison, inject 200 micrograms ivermectin per kilogram of body weight, subcutaneously. Follow use directions for cattle as described under **ADMINISTRATION.**

RESIDUE WARNING: Do not treat reindeer or American bison within 8 weeks (56 days) of slaughter.

WARNING

NOT FOR USE IN HUMANS.

Keep this and all drugs out of the reach of children.

The Material Safety Data Sheet (MSDS) contains more detailed occupational safety information. To report adverse effects, obtain an MSDS or for assistance, contact Merial at 1-888-637-4251.

RESIDUE WARNING: Do not treat cattle within 35 days of slaughter. Because a withdrawal time in milk has not been established, do not use in female dairy cattle of breeding age. A withdrawal period has not been established for this product in pre-ruminating calves. Do not use in calves to be processed for veal. Do not treat swine within 18 days of slaughter.

PRECAUTIONS

Transitory discomfort has been observed in some cattle following subcutaneous administration. A low incidence of soft tissue swelling at the injection site has been observed. These reactions have disappeared without treatment. For cattle, divide doses greater than 10 ml between two injection sites to reduce occasional discomfort or site reaction. Use sterile equipment and sanitize the injection site by applying a suitable disinfectant. Clean, properly disinfected needles should be used to reduce the potential for injection site infections.

Observe cattle for injection site reactions. Reactions may be due to clostridial infection and should be aggressively treated with appropriate antibiotics. If injection site infections are suspected, consult your veterinarian.

This product is not for intravenous or intramuscular use. Protect

product from light.

IVOMEC Injection for Cattle and Swine has been developed specifically for use in cattle, swine, reindeer, and American bison **only.** This product should not be used in other animal species as severe adverse reactions, including fatalities in dogs, may result. Restricted Drug (California) - use only as directed.

When to Treat Cattle with Grubs

IVOMEC effectively controls all stages of cattle grubs. However, proper timing of treatment is important. For most effective results, cattle should be treated as soon as possible after the end of the heel fly (warble fly) season. Destruction of *Hypoderma* larvae (cattle grubs) at the period when these grubs are in vital areas may cause undesirable host-parasite reactions including the possibility of fatalities. Killing *Hypoderma lineatum* when it is in the tissue surrounding the esophagus (gullet) may cause salivation and bloat; killing *H. bovis* when it is in the vertebral canal may cause staggering or paralysis. These reactions are not specific to treatment with IVOMEC, but can occur with any successful treatment of grubs. Cattle should be treated either before or after these stages of grub development. Consult your Veterinarian concerning the proper time for treatment. Cattle treated with IVOMEC after the end of- the heel fly season may be retreated with IVOMEC during the winter for internal parasites, mange mites, or sucking lice without danger of grub-related reactions. A planned parasite control program is recommended.

Environmental Safety

Studies indicate that when ivermectin comes in contact with soil, it readily and tightly binds to the soil and becomes inactive over time. Free ivermectin may adversely affect fish and certain aquatic organisms. Do not permit water runoff from feed lots to enter lakes, streams or ponds. Do not contaminate water by direct application or by improper disposal of drug containers. Dispose of containers in an approved landfill or by incineration. As with other avermectins, ivermectin is excreted in the dung of treated animals and can inhibit the reproduction and growth of pest and beneficial insects that use dung as a source of food and for reproduction. The magnitude and duration of such effects are species and life-cycle specific. When used according to label directions, the product is not expected to have an adverse impact on populations of dung-dependent insects.

HOW SUPPLIED

IVOMEC Injection for Cattle and Swine is available in four ready -to-use pack sizes:

The 50 ml pack is a multiple-dose, rubber-capped bottle. Each bottle contains sufficient solution to treat 10 head of 550 lb (250 kg) cattle or 100 head of 38 lb (17.3 kg) swine.

The 200 ml pack is a soft, collapsible pack designed for use with automatic syringe equipment. Each pack contains sufficient solution to treat 40 head of 550 lb (250 kg) cattle or 400 head of 38 lb (17.3 kg) swine.

The 500 ml pack is a soft, collapsible pack designed for use with automatic syringe equipment. Each pack contains sufficient solution to treat 100 head of 550 lb (250 kg) cattle or 1000 head of 38 lb (17.3 kg) swine.

The 1000 ml is a soft, collapsible pack designed for use with automatic syringe equipment. Each pack contains sufficient solution to treat 200 head of 550 lb (250 kg) cattle or 2000 head of 38 lb (17.3 kg) swine.

Manufactured by: Merial Saude Animal Ltda., Paulinia, Sao Paulo, CEP 13140-970, Brazil

Manufactured for: Merial Limited, Operational Headquarters, 3239 Satellite Blvd. Duluth, Georgia 30096-4640, U.S.A. 1050-1491-03 / Rev. 07-2007

SAFE-GUARD® MEDICATED DEWORMER FOR SWINE (EZ SCOOP®)
Intervet!Merck Animal Health

(fenbendazole)

Type B Medicated Feed

EZ Scoop® (Scoop Included)

2 TO 12 DAY TREATMENT REGIMEN FOR THE REMOVAL OF:

Lungworms: *(Metastrongylus apri, **M.** pudendotectus).* **Gastrointestinal Worms:** Adult and larvae (L_3, L_4 stages -liver, lung, intestinal forms) large roundworms *(Ascaris suum)* , nodular worms *(Oesophagostomum dentatum,* 0 . *quadrispinulatum),* small stomach worms *(Hyostrongylus rubidus),* adult and larvae (L_2, L_3, L_4 stages-intestinal mucosa\ forms) whipworms *(Trichuris suis).* **Kidneyworms:** Adult and larvae *(Stephanurus dentatus).* **DOSAGE REGIMEN:** 9 mg fenbendazole per kg body weight (4.08 mg fenbendazole per lb body weight) over a period of 3 to 12 days.

ACTIVE DRUG INGREDIENT

Fenbendazole 1.8% (8.172 g/lb)

GUARANTEED ANALYSIS:

Calcium (Ca) (min) 20.0%

Calcium (Ca) (max)24.0%

OTHER INGREDIENTS:

Rice Hull s, Calcium Carbonate and Mineral Oil.

DIRECTIONS FOR USE:

Safe-Guard® EZ Scoop ® premix should be mixed to a concentration of 10 to 300 grams fenbendazole per ton of feed prior to feeding.

For Group Feeding (Pigs, Gilts, Sows or Boars): Examples of Mixing and Feeding Rates for Safe-Guard® EZ Scoop ® P remix:

Pounds of Safe-Guard® E Z Scoop® pre mix per ton of swine feed based on pig weight and average daily feed consumption:

Pig Wt (lbs)	Average daily feed consumption (lbs)	Treatment Period					
		3 days		6 days		12 days	
		lbs premix	Treats approximately:	lbs premix	Treats approximately:	lbs premix	Treat s approximately:
50	3.20	5.2	208 pigs	2.6	104 pigs	1.3	52 pigs
75	4.25	5.8	156 pigs	2.9	78 pigs	1.5	39 pigs
100	5.30	6.2	125 pigs	3.1	62 pigs	1.6	31 pigs
150	6.80	7.3	98 pigs	3.7	49 pigs	1.8	24 pigs
200	8.00	8.3	83 pigs	4.1	41 pigs	2.1	20 pigs

For Individual 400 lb Sow Feeding: Mix 1 level scoop (1.07 ounces) of Safe-Guard® EZ Scoop ® premix into **4** to 6 lbs of an individual 400 lb saw's daily ration and feed once daily for 3 consecutive days.

There is no pre-slaughter withdrawal period as Safe-Guard ® EZ Scoop ® can be fed to day of slaughter.

CONSULT YOUR VETERINARIAN FOR ASSISTANCE IN THE DIAGNOSIS , TREATMENT AND CONTROL OF PARASITISM.

Store at or below 25°C (77°F),

Distributed by : **Intervet Inc.,** Millsbo ro, DE 19966

The name EZ SCOOP is a registered trademark of North American Nutrition.

Net Weight	
10 lbs (4.54 kg)	584410-B
20 lbs (9.08 kg) (2 x 10 lb)	884430-B

CVP No.: 1047391.1

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CYDECTIN®
Boehringer Inge/heim
(moxidectin)
Oral Drench for
Sheep Antiparasitic
NADA 141-247,
Approved by FDA
Contains 1 mg
moxidectin/ml

For Treatment and Control of Infections Due to Internal Parasites of Sheep.
Consult your veterinarian for assistance in the diagnosis, treatment, and control of parasitism.

PRODUCT DESCRIPTION: CYDECTIN Oral Drench for Sheep is a ready-to-use solution containing 0.1% moxidectin. Moxidectin is an endectocide in the milbemycin chemical class which shares the distinctive mode of action characteristic of macrocyclic lactones. Moxidectin acts by interfering with chloride channel-mediated neurotransmission in the parasite. This results in paralysis and elimination of the parasite .

INDICATIONS: CYDECTIN Oral Drench for Sheep, when administered at the recommended dose level of 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight, is effective in the treatment and control of adult and larval (L4) stages of the following internal parasites of sheep:

Parasites
Haemonchus contortus - Adult and L4
Teladorsagia circumcincta - Adult and L4
Teladorsagia trifurcata - Adult and L4
Trichostrongylus axei - Adult and L4
Trichostrongylus colubriformis - Adult and L4
Trichostrongylus vitrinus - Adult and L4
Cooperiacurticei - Adult and L4
Cooperiaoncophora - Adult and L4
Oesophagostomum columbianum - Adult and L4
Oesophagostomum venulosum - Adult and L4
Nematodirus battus - Adult and L4
Nematodirus filicollis - Adult and L4
Nematodirus spathiger - Adult and L4

ADMINISTRATION :. CYDECTIN Oral Drench is ready-to-use. Administer 1 ml per 11 lb (1 ml per 5 kg) body weight into the mouth of the sheep, using any standard drenching equipment. Check dose rates and equipment before drenching. Do not overdose. Do not mix with any other products before administration. Avoid contaminating the drench solution.

DOSAGE: The recommended rate of administration for CYDECTIN Oral Drench for Sheep is 1 ml per 11 lb (5 kg) body weight to provide 0.2 mg moxidectin/2.2 lb (0.2 mg/kg) body weight. The table below will assist in the calculation of the appropriate volume of drench in 1.0 ml increments and it must be administered based on the weight of animal being treated.

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Body Weight		Dose
11 lb	5 kg	1 ml
22lb	10 kg	2 ml
33lb	15 kg	3 ml
44 lb	20 kg	4ml
55 lb	25 kg	5ml
66 lb	30 kg	6 ml
77lb	35 kg	7 ml
88lb	40 kg	8 ml
99lb	45 kg	9 ml
110 lb	50 kg	10 ml
121 lb	55 kg	11 ml
132 lb	60 kg	12 ml
143 lb	65 kg	13 ml
154 lb	70 kg	14 ml
165lb	75 kg	15 ml

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HUMAN WARNINGS: Not for use in humans. Keep this and all drugs out of the reach of children. To obtain a copy of the material safety data sheet (MSDS) which provides more detailed occupational safety information or to report adverse reactions attributable to exposure to this product.

RESIDUE WARNINGS: Sheep must not be slaughtered for human consumption within 7 days of treatment. Because a withholding time in milk has not been established for this product, do not use in female sheep providing milk for human consumption.

ENVIRONMENTAL WARNINGS: Studies indicate that when moxidectin comes in contact with the soil, it readily and tightly binds to the soil and becomes inactive. Free moxidectin may adversely affect fish and certain aquatic organisms. Do not contaminate water by direct application or by improper disposal of drug containers.

ANIMAL SAFETY WARNINGS: CYDECTIN Oral Drench for Sheep has been formulated specifically for oral use in sheep and should not be given by any other route of administration. Do not use in sick, debilitated, or underweight animals. This product should not be used in other animal species as severe adverse reactions, including fatalities in dogs, may result.

ANIMAL SAFETY: A well-controlled U.S. study has demonstrated an adequate margin of safety to allow treatment of sheep four months of age and older with Cydectin Oral Drench. In this study no signs of toxicity were seen in sheep given up to 5 times the recommended dose. Reproductive safety studies evaluating the use of Cydectin Oral Drench in breeding ewes and rams have not been conducted in the U.S.

STORAGE: Store product at or below 77°F (25°C). Protect from light.

DISPOSAL: Do not contaminate water by direct application or by improper disposal of drug containers. Dispose of containers in an approved landfill or by incineration.

Restricted Drug (CA) - Use Only As Directed

Manufactured for: **Boehringer Ingelheim Vetmedica, Inc.**, St. Joseph, MO 64506 U.S.A.

Contents	NDC	
1 L	0010-3840-01	B8F8/B8F9 80733747 80728948, R.0/80728921, R.0 384001-01/384002-01
4L	0010-3840-02	B9F0/B9F1 80733720 80728557, R.0/80728549, R.0 384004-02/384005-02