

Summary of Product Characteristics

1 NAME OF THE VETERINARY MEDICINAL PRODUCT

Endectomectin 10 mg/ml Solution for Injection for Cattle, Sheep and Pigs

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:

Active Substance:

Ivermectin 10 mg

Excipients:

For the full list of excipients, see section 6.1

3 PHARMACEUTICAL FORM

Solution for Injection.

A clear, colourless to pale yellow solution.

4 CLINICAL PARTICULARS

4.1 Target Species

Cattle, Sheep and Pigs.

4.2 Indications for use, specifying the target species

The product is indicated for the effective treatment and control of the following harmful species of gastro-intestinal roundworms, lungworms, eye worms, warbles, lice and mange mites of cattle and sheep and for the treatment and control of parasitic diseases of swine caused by the following parasites:

Cattle

Gastrointestinal roundworms (adult and fourth-stage larvae):

Ostertagia spp. (including inhibited *O. ostertagi*)

Haemonchus placei

Trichostrongylus axei

T. colubriformis

Cooperia spp

Oesophagostomum radiatum

Strongyloides papillosus (adult)

Nematodirus helvetianus (adult)

N. spathiger (adult)

Bunostomum phlebotomum

Toxocara vitulorum

Trichuris spp. (adult)

Lungworms (adult and fourth-stage larvae):

Dictyocaulus viviparus

Eye worms (adult):

Thelazia spp.

Warbles:

Hypoderma bovis

H. lineatum

Mange Mites:

Psoroptes bovis

Sarcoptes scabiei var. *bovis*

Sucking Lice:

Linognathus vituli

Haematopinus eurysternus

Solenopotes capillatus

The product may also be used as an aid in the control of biting lice (*Damalinea bovis*) and the mange mite (*Chorioptes bovis*), but complete elimination may not occur.

Prolonged Activity

When cattle have to graze on pasture contaminated with infective larvae of cattle nematodes, treatment with the product at the recommended dose rate can control re-infection with *Haemonchus placei* and *Cooperia* spp. acquired up to 14 days after treatment, *Ostertagia ostertagi* and *Oesophagostomum radiatum* acquired up to 21 days after treatment and *Dictylocaulus viviparus* up to 28 days after treatment.

To obtain optimal benefit from the persistent activity of the product for grazing animals, it is recommended that calves which are set-stocked in the first grazing season should be treated 3, 8 and 13 weeks after the day of turn-out. This can protect the animals from parasitic gastro-enteritis and lungworm disease throughout the grazing season, provided they are set-stocked, all the calves included in the programme and that no untreated cattle are added to the pasture.

Treated animals should always be monitored according to good husbandry practices.

Sheep

Mange Mites:

*Psoroptes ovis**

* For the treatment and control of sheep scab, two injections with a seven-day interval are required to treat clinical signs of scab to eliminate mites.

Gastrointestinal roundworms (adult and fourth-stage larvae):

Ostertagia circumcincta including inhibited larvae

O. trifurcata

Haemonchus contortus including inhibited larvae

Trichostrongylus axei (adults)

T. colubriformis and *T. vitrinus* (adults)

Cooperia curticei

Oesophagostomum columbianum

O. venulosum (adults)

Nematodirus filicollis

Chabertia ovina

Trichuris ovis (adults)

Benzimidazole-resistant strains of *Haemonchus contortus* and *Ostertagia circumcincta* are also controlled.

Lungworms:

Dictyocaulus filaria (adult and fourth-stage larvae)

Protostrongylus rufescens (adults)

Nasal bots (all larval stages):

Oestrus ovis

Pigs

Gastrointestinal roundworms (adult and fourth-stage larvae):

Ascaris suum (adults and fourth-stage larvae)

Hyostrongylus rubidus (adults and fourth-stage larvae)

Oesophagostomum spp. (adults and fourth-stage larvae)

Strongyloides ransomi (adults and somatic larval stages)

Lungworms:

Metastrongylus spp. (adults)

Lice:

Haematopinus suis

Mange mites:

Sarcoptes scabiei var. *suis*

The product may also be used as an aid in the control of adult whipworm (*Trichuris suis*).

The product given to sows 7 to 14 days before farrowing effectively controls transmission via the milk of *Strongyloides ransomi* infections to piglets.

4.3 Contraindications

Do not use in animals with known hypersensitivity to the active ingredient.

Do not use in cats or dogs (see also section 4.5).

This product is not for intramuscular or intravenous use.

4.4 Special warnings for each target species

Care should be taken to avoid the following practices because they increase the risk of development of resistance and could ultimately result in ineffective therapy:

- Too frequent and repeated use of anthelmintics from the same class, over an extended period of time.
- Underdosing, which may be due to underestimation of body weight, misadministration of the product, or lack of calibration of the dosing device (if any).

Suspected clinical cases of resistance to anthelmintics should be further investigated using appropriate tests (e.g. Faecal Egg Count Reduction Test). Where the results of the test(s) strongly suggest resistance to a particular anthelmintic, an anthelmintic belonging to another pharmacological class and having a different mode of action should be used.

Resistance to ivermectin has been reported in *Ostertagia ostertagi* and *Cooperia* spp., in cattle and *Teladorsagia circumcincta* in sheep. Therefore, the use of this product should be based on local (regional, farm) epidemiological information about susceptibility of these helminth species and recommendations on how to limit further selection for resistance to anthelmintics.

Sheep

Treatment of psoroptic mange (sheep scab) with one injection is not recommended because, although a clinical improvement may be seen, elimination of all mites may not occur.

Sheep scab (*Psoroptes ovis*) is an extremely contagious external parasite of sheep. Following treatment of infected sheep great care must be taken to avoid re-infestation, as mites may be viable for up to 15 days off the sheep. It is important to ensure all sheep which have been in contact with infected sheep are treated. Contact between treated, infected and non-treated, non-infected flocks must be avoided until at least 7 days after the last treatment.

Pigs

The product has a persistent drug level sufficient to control mite infections throughout the egg to adult life cycle. However, since the Endectomectin effect is not immediate, care must be taken to prevent re-infestation from exposure to untreated animals or contaminated facilities. Generally pigs should be moved to clean quarters or exposed only to uninfected pigs approximately one week after treatment.

Louse eggs are unaffected by the product and may require up to 3 weeks to hatch. Louse infestations developing from hatching eggs may require re-treatment.

4.5 Special precautions for use

Special precautions for use in animals

The product has been formulated specifically for use in these target species. It should not be used in other species as severe adverse reactions, including fatalities in dogs, may occur.

To avoid secondary reactions due to the death of Hypoderma larvae in the oesophagus or in the spine it is recommended to administer the product at the end of warble fly activity and before the larvae reach their resting sites. Consult your veterinarian on the correct timing of treatment.

Special precautions to be taken by the person administering the veterinary medicinal product to animals

Do not smoke or eat while handling the product.

Wash hands after use.

Take care to avoid self-administration; the product may cause local irritation and/or pain at the site of injection.

In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician.

4.6 Adverse reactions (frequency and seriousness)

Cattle

Transitory discomfort has been observed in some cattle following subcutaneous administration. Soft tissue swelling at the injection site has been commonly observed. These reactions disappear without treatment.

Sheep

Immediately following subcutaneous injection, activity suggesting pain, sometimes intense but usually transient, has been observed in some sheep.

Pigs

Mild and transient pain reactions may be seen in some pigs following subcutaneous administration.

4.7 Use during pregnancy, lactation or lay

The product can be administered to beef cows, ewes and sows at any stage of pregnancy or lactation provided that the milk is not intended for human consumption. The product will not affect the fertility of cows, bulls, breeding ewes, rams, breeding sows and boars and can be given to all ages of animals including young calves, piglets and lambs.

4.8 Interaction with other medicinal products and other forms of interaction

The product has been used concurrently without adverse effects with foot and mouth disease vaccine or clostridial vaccine, given at separate injection sites.

4.9 Amounts to be administered and administration route

To ensure administration of a correct dose, body weight should be determined as accurately as possible. If animals are to be treated collectively rather than individually, they should be grouped according to their bodyweight and dosed accordingly, in order to avoid under- or over-dosing.

Cattle

The product should be given only by subcutaneous injection at the recommended dosage level of 200 µg ivermectin per kg bodyweight under the loose skin in front of, or behind, the shoulder in cattle.

Each ml contains 10 mg of ivermectin sufficient to treat 50 kg of bodyweight. The injection may be given with any standard automatic or single-dose or hypodermic syringe. Use of 17 gauge x ½ inch needle is suggested. Injection of wet or dirty animals is not recommended. If using a single-dose or hypodermic syringe, use a separate sterile needle to withdraw the product from the pack.

Sheep

The product should be given only by subcutaneous injection at the recommended dosage level of 200 µg ivermectin per kg bodyweight under the loose skin over the neck in sheep.

Each ml contains 10 mg of ivermectin sufficient to treat 50 kg of bodyweight. The injection may be given with any standard automatic or single-dose or hypodermic syringe. Use of 17 gauge x ½ inch needle is suggested. Injection of wet or dirty animals is not recommended. If using a single-dose or hypodermic syringe, use a separate sterile needle to withdraw the product from the pack. For the treatment of young lambs, a syringe capable of dosing in 0.1ml increments is recommended.

For the treatment and control of sheep scab (*Psoroptes ovis*), two injections with a seven-day interval are required to treat clinical signs of scab and to eliminate mites.

Pigs

Young animals and adults

The product must be administered by subcutaneous injection in the neck, at the recommended dose rate of 1 ml per 33 kg bodyweight (corresponding to 300 µg ivermectin per kg bodyweight). The solution may be given with any standard automatic or single-dose equipment. For the treatment of young piglets, a syringe capable of dosing in 0.1ml increments is recommended.

Use aseptic technique.

1. Breeding animals

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

SOWS:

Treat prior to farrowing, preferably 7-14 days before, to minimise infection of piglets.

GILTS:

Treat 7-14 days prior to breeding.

Treat 7-14 days prior to farrowing.

BOARS:

Frequency of and need for treatments are dependent upon exposure. Treat at least twice a year.

2. Growers/Finishers

All pigs received for finishing should be treated before placement in clean quarters. Pigs exposed to soil may need re-treatment if re-infection occurs.

4.10 Overdose (symptoms, emergency procedures, antidotes), if necessary

Cattle

Single doses of 4 mg ivermectin per kg (20 x the use level) given subcutaneously resulted in ataxia and depression.

Sheep

At dose levels up to 4 mg ivermectin per kg (20 x the use level) given subcutaneously resulted in ataxia and depression.

Pigs

A dose of 30 mg ivermectin per kg (100 x the recommended dose of 300 µg per kg) injected subcutaneously to pigs caused lethargy, ataxia, bilateral mydriasis, intermittent tremors, laboured breathing and lateral recumbency.

No antidote has been identified; however symptomatic therapy may be beneficial.

4.11 Withdrawal Period(s)

Cattle

Meat and offal: 49 days

Milk: Not authorised for use in lactating cows producing milk for human consumption. Do not use in non-lactating dairy cows including pregnant dairy heifers within 60 days of calving.

Sheep

Meat and offal: 42 days

Milk: Not authorised for use in lactating sheep producing milk for human consumption. Do not use in sheep within 60 days of lambing where milk is to be used for human consumption.

Pigs

Meat and offal: 28 days

5 PHARMACOLOGICAL or IMMUNOLOGICAL PROPERTIES

Pharmacotherapeutic Group: Endectocide, avermectin

ATC vet Code: QP54 AA01

5.1 Pharmacodynamic properties

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 hyper-polarisation 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 lactone have a low affinity for other mammalian ligand-gated chloride channels and they do not readily cross the blood-brain barrier.

5.2 Pharmacokinetic properties

Cattle and Pigs:

After subcutaneous administration of the recommended dose of the product to cattle (200 microgram/kg), the following parameters were observed: C_{max} of 37 ng/ml and AUC of 7558 ng/ml.h. After subcutaneous administration of the recommended dose of the product to pigs (300 microgram/kg), the following parameters were observed: C_{max} of 14 ng/ml and AUC of 1887 ng/ml.h. Ivermectin is only partially metabolised. In cattle, only about 1-2% is excreted in the urine, the remainder is excreted in faeces, approximately 60% of which is excreted as unaltered drug. The remainder is excreted as metabolites or degradation products. Biliary excretion, followed by elimination in faeces is the major route of ivermectin excretion in pigs.

Sheep:

Following the subcutaneous administration of the product to sheep at a dose of 200 µg/kg, the maximum concentration in plasma (mean C_{max} = ~14 ng/ml) was reached within 1-4 days. The elimination half-life is ~109 hours.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Glycerol formal
Polyethylene glycol

6.2 Incompatibilities

In the absence of compatibility studies this veterinary medicinal product must not be mixed with other veterinary medicinal products.

6.3 Shelf-life

Shelf life of the veterinary medicinal product as packaged for sale: 2 years.
Shelf life after first opening the immediate packaging: 28 days.

6.4 Special precautions for storage

Do not store above 30 °C. Protect from direct sunlight.

6.5 Nature and composition of immediate packaging

The product will be supplied in 50 ml, 100 ml, 250 ml, 500 ml and 1 litre high density polyethylene vials with bromobutyl bungs and aluminium caps.
Not all pack sizes may be marketed.

6.6 Special precautions for the disposal of unused veterinary medicinal products or waste materials

Studies indicate that when ivermectin comes in contact with the soil, it readily and tightly binds to the soil and becomes inactive. Any unused veterinary medicinal product or waste materials derived from such veterinary medicinal product should be disposed of in accordance with local requirements. Do not contaminate lakes or streams, as free ivermectin may adversely affect fish and certain water-borne organisms.

7 MARKETING AUTHORISATION HOLDER

Norbrook Laboratories Limited
Station Works
Camlough Road
Newry
Co. Down
BT35 6JP

8 MARKETING AUTHORISATION NUMBER(S)

VPA 10999/111/001

9 DATE OF THE FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 12th June 2009

Renewal of last authorisation: 16th May 2014

10 DATE OF REVISION OF THE TEXT