

SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE VETERINARY MEDICINAL PRODUCT

Enrobactin 25 mg/ml concentrate for oral solution for pet rabbits, rodents, ornamental birds and reptiles

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:

Active substance:

Enrofloxacin 25 mg

Excipient(s):

Benzyl alcohol (E-1519) 18 mg

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Concentrate for oral solution.

Clear slightly yellow solution.

4. CLINICAL PARTICULARS

4.1 Target species

Pet rabbits, rodents, ornamental birds and reptiles.

4.2 Indications for use, specifying the target species

Pet rabbits

Treatment of infections of the digestive and respiratory tracts caused by enrofloxacin susceptible strains of: *Escherichia coli*, *Pasteurella multocida* and *Staphylococcus* spp.

Treatment of skin and wound infections caused by enrofloxacin susceptible strains of *Staphylococcus aureus*.

Rodents, reptiles and ornamental birds

Treatment of infections of the digestive and respiratory tracts where clinical experience, if possible, supported by susceptibility testing of the causal organism, indicates enrofloxacin as the substance of choice.

4.3 Contraindications

Do not use in cases of known hypersensitivity to the active substance, to other (fluoro)quinolones or to any of the excipients..

Do not use in animals that are epileptic or suffer from seizures since enrofloxacin may cause CNS stimulation.

4.4 Special warnings for each target species

None.

4.5 Special precautions for use

Special precautions for use in animals

Official and local antimicrobial policies should be taken into account when the product is used.

Fluoroquinolones should be reserved for the treatment of clinical conditions which have responded poorly, or are expected to respond poorly, to other classes of antimicrobials.

Whenever possible, fluoroquinolones should only be used based on susceptibility testing.

Use of the product deviating from instructions given in the SPC may increase the prevalence of bacteria resistant to fluoroquinolones and may decrease the effectiveness of treatment with other quinolones due to the potential for cross resistance.

Special caution should be taken when using enrofloxacin in animals with impaired renal function.

Do not administer undiluted product. Ensure thorough mixing. Direct oral administration has been associated with buccal and pharyngeal necrosis. This veterinary medicinal product should be administered only as indicated in section 4.9 (Amounts to be administered and administration route).

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

People with known hypersensitivity to (fluoro)quinolones or to any of the excipients should avoid contact with the veterinary medicinal product.

The undiluted veterinary medicinal product is strongly alkaline and may cause irritation if it comes into contact with the skin or eyes.

Personal protective equipment consisting of impermeable gloves should be worn when handling the veterinary medicinal product.

Avoid skin and eye contact. Wash any splashes from skin or eyes immediately with large amounts of water. If irritation persists, seek medical advice.

Wash hands after use. Do not eat, drink or smoke whilst handling the product.

4.6 Adverse reactions (frequency and seriousness)

Digestive tract disorders (e.g. diarrhoea) may occur in very rare cases. These signs are generally mild and transient.

During the period of rapid growth, enrofloxacin may affect articular cartilage.

The frequency of adverse reactions is defined using the following convention:

- very common (more than 1 in 10 animals treated displaying adverse reaction(s))
- common (more than 1 but less than 10 animals in 100 animals treated)
- uncommon (more than 1 but less than 10 animals in 1,000 animals treated)

- rare (more than 1 but less than 10 animals in 10,000 animals treated)
- very rare (less than 1 animal in 10,000 animals treated, including isolated reports).

4.7 Use during pregnancy, lactation or lay

Pet rabbits and rodents

Laboratory studies in rats and rabbits have not produced any evidence of teratogenic effects but have shown evidence of foetotoxic effects at maternotoxic doses. The safety of the veterinary medicinal product has not been established during pregnancy and lactation. Use only accordingly to the benefit/risk assessment by the responsible veterinarian.

Ornamental birds and reptiles

The safety of the veterinary medicinal product has not been established during lay, although detrimental effects on developing eggs of avian scavengers have been reported when these birds ingest livestock meat from animals previously administered fluoroquinolones. Use only accordingly to the benefit-risk assessment by the responsible veterinarian.

4.8 Interaction with other medicinal products and other forms of interaction

Do not use enrofloxacin concomitantly with antimicrobial substances acting antagonistically to quinolones (e.g. macrolides, tetracyclines or phenicols). Do not use concurrently with theophylline as the elimination of theophylline may be delayed.

The simultaneous application of substances containing aluminium, calcium or magnesium can impair the absorption of enrofloxacin

4.9 Amounts to be administered and administration route

Instructions for use

For administration by oral gavage.

The undiluted veterinary medicinal product is strongly alkaline and, therefore, to avoid caustic effects, it is essential to dilute the product with at least 4 parts water prior to administration. In the case of smaller animals (weighing less than 500 g), it may be appropriate to dilute 0.1 ml of the neat product with >4 parts water and administer a proportion of the total volume.

10 ml bottle: A 1 ml syringe is provided with the 10 ml bottle for withdrawal of small volumes of the product and to facilitate dilution prior to administration. This syringe has dosage graduations of 0.01 and 0.1 ml. The lowest volume that has been demonstrated to be accurate is 0.1 ml. Therefore, for accuracy of dosing, it is recommended to draw up a minimum of 0.1 ml of product.

30 and 50 ml bottles: A 5 ml syringe is provided for withdrawal of the product.

The diluted solution should be mixed thoroughly prior to administration.

The dilution should be made on a twice-daily basis immediately prior to provision, preferably in a glass container. Any unused solution should be disposed of immediately after use.

After extracting and expressing the amount of product required the syringes should be washed with lukewarm water to remove any remaining product. The syringe can subsequently be used to prepare another solution or be opened, emptied and left to dry.

Dosage

Owing to physiological and pharmacokinetic differences between the wide range of species for which this product is indicated, the dose rates below are for guidance only. Depending upon the species of animal and the infection to be treated, alternative doses may be appropriate using an evidence-based approach. However, any change in dosing regimen should be based on a benefit: risk assessment by the responsible veterinarian, as tolerance at higher doses has not been investigated. To ensure a correct dosage body weight should be determined as accurately as possible to avoid underdosing.

To avoid inhalation of the medication, care should be taken with restraint of the animal and administration of the product.

Rodents and pet rabbits

5 mg enrofloxacin per kg bodyweight (0.2 ml per kg bodyweight), twice daily for 7 days.

Reptiles

5 mg enrofloxacin per kg bodyweight (0.2 ml per kg bodyweight), at 24-48 hour intervals for 6 days.

Reptiles are ectothermic, relying on external heat sources to maintain their body temperature at the optimum level for correct function of all body systems. Metabolism of substances and activity of the immune system are, thus, critically dependant on the body temperature. Therefore, the veterinarian must be aware of correct temperature requirements of the respective reptile species and the hydration status of the individual patient. Furthermore, it has to be considered that large differences exist in the pharmacokinetic behaviour of enrofloxacin among different species, which additionally will influence the decision about the correct dosage of the veterinary medicinal product. Therefore, the recommendations made here can only be used as a starting point for individual dose setting.

Ornamental birds

10 mg enrofloxacin per kg bodyweight (0.4 ml per kg bodyweight), twice daily 7 days.

Treatment should be re-evaluated if no improvement is seen. It is commonly advised to re-evaluate the treatment if no clinical improvement is observed within 3 days.

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

In cases of accidental overdose digestive tract disorders (e.g. vomiting, diarrhoea) and neurological disorders may occur.

4.11 Withdrawal period(s)

Do not use in animals producing food intended for human consumption.

5. PHARMACOLOGICAL PROPERTIES

Pharmacotherapeutic group: Antibacterials for systemic use, fluoroquinolones.
ATCvet code: QJ01MA90.

5.1 Pharmacodynamic properties

Mode of action

Two enzymes essential in DNA replication and transcription, DNA gyrase and topoisomerase IV, have been identified as the molecular targets of fluoroquinolones. Target inhibition is caused by non-covalent binding of fluoroquinolone molecules to these enzymes. Replication forks and translational complexes cannot proceed beyond such enzyme-DNA-fluoroquinolone complexes, and inhibition of DNA and mRNA synthesis triggers events resulting in a rapid, drug concentration-dependent killing of pathogenic bacteria. The mode of action of enrofloxacin is bactericidal and bactericidal activity is concentration dependent.

Antibacterial spectrum

Enrofloxacin is active against many Gram-negative bacteria such as *Escherichia coli*, *Klebsiella* spp., *Actinobacillus pleuropneumoniae*, *Pasteurella* spp. (e.g. *Pasteurella multocida*), *Bordetella* spp., *Proteus* spp., *Pseudomonas* spp., against Gram-positive bacteria such as *Staphylococcus* spp. (e.g. *Staphylococcus aureus*) and against *Mycoplasma* spp. at the recommended therapeutic doses.

Types and mechanisms of resistance

Resistance to fluoroquinolones has been reported to arise from five sources, (i) point mutations in the genes encoding for DNA gyrase and/or topoisomerase IV leading to alterations of the respective enzyme, (ii) alterations of drug permeability in Gram-negative bacteria, (iii) efflux mechanisms, (iv) plasmid mediated resistance and (v) gyrase protecting proteins. All mechanisms lead to a reduced susceptibility of the bacteria to fluoroquinolones. Cross-resistance within the fluoroquinolone class of antimicrobials is common.

5.2 Pharmacokinetic particulars

The pharmacokinetics of enrofloxacin are such that both oral and parenteral administration leads to similar serum levels. Enrofloxacin possesses a high distribution volume. Tissue levels 2-3 times higher than found in the serum have been demonstrated in laboratory animals and target species. Organs in which high levels can be expected are the lungs, liver, kidney, skin, bone and lymphatic system. Enrofloxacin also distributes into the cerebrospinal fluid, the aqueous humour and the foetus in pregnant animals.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Benzyl alcohol (E-1519)
Potassium hydroxide (for pH adjustment)
Hydroxyethylcellulose
Caramel aroma
Water, purified

6.2 Major 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: 3 years.
Shelf life after first opening the immediate packaging: 28 days.
Shelf life after dilution according to directions: Use immediately

6.4 Special precautions for storage

Keep the bottle tightly closed. Any remaining diluted solution should be discarded immediately after use.

6.5 Nature and composition of immediate packaging

10 ml, 30 ml, and 50 ml amber type III glass bottles closed with tamper-evident HDPE/LDPE screw caps with ring and colourless LDPE syringe insert in a carton box containing 10 ml, 30 ml and 50 ml respectively. A 1 ml dosing syringe is supplied with each 10 ml bottle, a 5 ml dosing syringe is supplied with each 30 and 50 ml bottle. Each bottle is packed in an individual carton.

Pack sizes:

1 x 10 ml, 10 x (1 x 10 ml).

1 x 30 ml, 10 x (1 x 30 ml).

1 x 50 ml, 10 x (1 x 50 ml).

Not all pack sizes may be marketed.

6.6 Special precautions for the disposal of unused veterinary medicinal product or waste materials derived from the use of such products

Any unused veterinary medicinal product or waste materials derived from such veterinary medicinal product should be disposed of in accordance with local requirements.

7. MARKETING AUTHORISATION HOLDER

Le Vet Beheer B.V.
Wilgenweg 7

3421 TV Oudewater
The Netherlands

8. MARKETING AUTHORISATION NUMBER

Vm 41821/4026

9. DATE OF FIRST AUTHORISATION

30 December 2015

10. DATE OF REVISION OF THE TEXT

February 2021

Approved: 26/02/21

A handwritten signature in dark ink, appearing to read 'D. Auster', with a horizontal line extending to the right.