1 NAME OF THE VETERINARY MEDICINAL PRODUCT

KARIFLOX 25 mg/ml oral solution for calves

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:

Active substance:
Enrofloxacin..... 25.0mg

Excipients:
Benzyl Alcohol (E 1519)..... 14.0mg

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Oral solution.
Ready to use aqueous clear, oral solution.

4 CLINICAL PARTICULARS

4.1 Target Species

Calves.

4.2 Indications for use, specifying the target species

In calves:
- treatment of respiratory infections due to *Pasteurella multocida* and *Mannheimia haemolytica*.
- treatment of gastro-intestinal infection due to *Escherichia coli*.

To be used where clinical experience and/or sensitivity testing indicates enrofloxacin as the drug of choice.

4.3 Contraindications

Do not use when resistance/cross-resistance to (fluoro)quinolones is known to occur.
Do not use in case of known hypersensitivity to the active substance, other (flouro)quinolones or to any of the excipients.
Do not use in case of disturbances in growth of cartilage and/or during injury of locomotory system particularly on functionally loaded joints or due to body weight

loaded joints.

4.4 Special warnings for each target species

None.

4.5 Special precautions for use

Do not use for prophylaxis.

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

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.

Wherever 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.

If there is no clinical improvement within two to three days susceptibility testing should be repeated and therapy should be changed, if appropriate.

Calves receiving roughage only should not be treated orally but by injection.

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

Those with known hypersensitivity to (fluoro)quinolones should avoid contact with this product.
Wear impervious gloves when handling the product.
Wash any splashes from skin or eyes immediately with water.
Wash hands and exposed skin after use.
Do not eat, drink or smoke whilst using the product.
Direct contact with the skin should be avoided because of sensitisation, contact dermatitis and possible hypersensitivity reactions.

4.6 Adverse reactions (frequency and seriousness)

Gastrointestinal disturbances may occasionally occur.

4.7 Use during pregnancy, lactation or lay

Not applicable. The product is not indicated for use in adult cattle.

4.8 Interaction with other medicinal products and other forms of interaction

Concurrent administration of enrofloxacin with other antimicrobials, tetracyclines and macrolide antibiotics, may result in antagonistic effects.

Absorption of enrofloxacin may be reduced if the product is administered together with substances containing magnesium or aluminium.

Do not combine enrofloxacin with steroidal anti-inflammatory products.

4.9 Amounts to be administered and administration route

Administer via milk replacer or drinking water.

The dose rate is 5 mg enrofloxacin per kg bodyweight (10 ml per 50 kg) daily for 5 days.

Medicated fluids should be made up immediately prior to provision on a daily basis.

If the product is to be given *via* the drinking water, concentrations of between 50 and 200 ppm should be considered as suitable working dilutions; concentrations in excess of 250 ppm should be avoided as precipitation may occur. The dilution should be made on a daily basis immediately prior to provision, preferably in a glass container.

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

Administration of enrofloxacin to calves at a dose of 30 mg/kg bodyweight per day resulted in damage to articular cartilage.
Do not exceed the recommended dose. In accidental overdose there is no antidote and treatment should be symptomatic.

4.11 Withdrawal period(s)

Meat and offal: 11 days

5 PHARMACOLOGICAL or IMMUNOLOGICAL PROPERTIES

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

5.1 Pharmacodynamic properties

Enrofloxacin is bactericidal in action with activity against a range of Gram positive and Gram negative bacteria and mycoplasmas. The mechanism of action of the quinolones is unique among antimicrobials; they act primarily to inhibit bacterial DNA gyrase, an enzyme responsible for controlling the supercoiling of bacterial DNA during replication. Resealing of the double-stranded helix is inhibited resulting in irreversible degradation of the chromosomal DNA. The fluoroquinolones also possess activity against bacteria in the stationary phase by an alteration of the permeability of the outer membrane phospholipid cell wall.

Resistances to fluoroquinolones occur primarily by alterations in bactericidal cell wall penetration. Permeability changes occurs either via decreased permeability of the hydrophilic pores or through alteration of the active transport (efflux) pump, thereby decreasing the intracellular content of fluoroquinolones.

5.2 Pharmacokinetic properties

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

The degree of metabolism depends on the species and ranges between 50 - 60%. Biotransformation at hepatic level of enrofloxacin results in the active metabolite ciprofloxacin. In general, metabolism is by hydroxylation and oxidation processes to oxofluoroquinolones. Other reactions that also occur are N-dealkylation and conjugation with glucoronic acid.

Excretion occurs by biliary and renal route, with excretion in the urine predominating.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Benzyl alcohol (E 1519)
Potassium hydroxide (for pH adjustment)
Hypromellose
Purified water

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
Shelf-life after dilution according to directions: 24 hours

6.4 Special precautions for storage

This veterinary medicinal product does not require any special storage conditions.

6.5 Nature and composition of immediate packaging

Container Material:High density polyethylene bottles
Container Closure:Polyethylene screw cap
Container Colour:White
Container Volume:250 ml, 500 ml, 1 litre, 5 litre.
Dosing Device:For all containers a 20 ml measuring device of polypropylene is included.

Not all pack size 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, where appropriate

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

Laboratorios Karizoo S.A. Pol. Ind. La Borda
Mas Pujades, 11-12
08140 Caldes de Montbui
Barcelona
Spain

8 MARKETING AUTHORISATION NUMBER(S)

VPA 10786/004/001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 10th July 2009
Date of last renewal: 9th July 2014

10 DATE OF REVISION OF THE TEXT

July 2017