SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE VETERINARY MEDICINAL PRODUCT

ENROXIL 100 mg/ml oral solution for chickens and turkeys.

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Active substance:
1 ml of oral solution contains: enrofloxacin 100 mg.

Excipient:
Benzyl alcohol 14 mg.

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Oral solution
Clear, yellow solution

4. CLINICAL PARTICULARS

4.1 Target species

Broilers, broiler breeders, replacement chickens, turkeys.

4.2 Indications for use, specifying the target species

Treatment of infections caused by the following bacteria susceptible to enrofloxacin:

Chickens
Mycoplasma gallisepticum,
Mycoplasma synoviae,
Avibacterium paragallinarum,
Pasteurella multocida.

Turkey
Mycoplasma gallisepticum,
Mycoplasma synoviae,
Pasteurella multocida.

4.3 Contraindications

Do not use for prophylaxis.
Do not use when resistance / cross-resistance to (fluoro)quinolones is known to occur in the flock intended for treatment.
Infections caused by *Streptococcus* spp., because of only marginal susceptibility to enrofloxacin.
Do not use in other animals.

Do not use in case of hypersensitivity to the active substance, or to any of the excipients.

4.4 Special warnings for each target species

Treatment of *Mycoplasma* spp infections may not eradicate the organism.

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 the instructions given in the SPC may increase the prevalence of bacteria resistant to the fluoroquinolones and may decrease the effectiveness of treatment with other quinolones due to the potential for cross resistance.
Since enrofloxacin was first authorised for use in poultry, there has been widespread reduction in susceptibility of *E. coli* to fluoroquinolones and emergence of resistant organisms. Resistance has also been reported in *Mycoplasma synoviae* in the EU.
As enrofloxacin will be partly excreted via kidneys, elimination will be delayed in cases with kidney disorders.

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

Personal protective equipment consisting of impervious gloves should be worn when handling the veterinary medicinal product.
Wash any splashes from skin or eyes immediately with water.
Wash hands and exposed skin after use.
Do not eat, drink or smoke while using the product.

Other precautions:

After the end of treatment, the watering system should be cleaned appropriately to prevent the intake of remaining subtherapeutic doses of the drug, which may lead to resistance.

4.6 Adverse reactions (frequency and seriousness)

Locomotion disturbances as a result of damage of joint cartilage could not be excluded in case that fluoroquinolones are used during the growing period, particularly at higher temperatures, when consumption of medicated water is drastically increased for longer period.

4.7 Use during pregnancy, lactation or lay

Laying birds:
Do not use in replacement birds within 14 days of coming into lay.

4.8 Interaction with other medicinal products and other forms of interaction

When combined with tetracyclines and macrolide antibiotics, enrofloxacin may produce an antagonistic effect.
Resorption of enrofloxacin may be reduced, when it is combined with substances containing magnesium or aluminium.
The serum level of theophylline may increase when it is combined with enrofloxacin.
Do not combine enrofloxacin with non steroidal antiphlogistics.
Increased influx of the air (admixing CO_2 from the air) into medicated drinking water may result in precipitation of enrofloxacin.
Precipitation of the salt of enrofloxacin and alkalis may occur at higher concentration of calcium and magnesium in the water system during intermediate dilution in the dosage devices.

4.9 Amounts to be administered and administration route

Dosage:
Chickens and turkeys
10 mg enrofloxacin/kg bodyweight per day for 3–5 consecutive days.

Treatment for 3–5 consecutive days; for 5 consecutive days in mixed infections and chronic progressive forms. If no clinical improvement is achieved within 2–3 days, alternative antimicrobial therapy should be considered based on susceptibility testing.
The uptake of medicated water depends on the clinical condition of the animals. In order to obtain the correct dosage the concentration of Enroxil should be adjusted accordingly. Taking into consideration that 10 mg enrofloxacin per kg body weight corresponds to 0.1 ml of Enroxil per kg body weight; the following calculation should be made to provide the required amount of Enroxil per litre of drinking water:

$$\frac{\text{ml Enroxil per kg bodyweight daily} \times \text{average bodyweight (kg) of the animals to be treated} \times \text{number of animals}}{\text{Total water consumption (l) of the flock at the previous day}} = \text{ml Enroxil per litre drinking water}$$

Care should be taken that the intended dose is completely ingested.

The product may be put directly into the header tank or introduced via a water proportioner pump. For the preparation of the medicated water for small groups of animals the measuring cup included with the packaging should be used. During preparation of medicated water, the product should be admixed into water and not the other way round.

Only sufficient medicated drinking water should be prepared to cover the daily requirements. Medicated water should be prepared every day, immediately prior to provision. Medication of the water supply should be continuous during the treatment

period and no other source of water should be available.
Medicated drinking water should be replaced every 24 hours.

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

Due to the low toxicity of enrofloxacin the danger of overdosing is limited. In cases of significant overdose, transient reduction of mobility and cramps may occur.
Symptomatic treatment is recommended in such cases.

4.11 Withdrawal period(s)

Chickens: Meat and offal: 7 days
Turkeys: Meat and offal: 13 days
Not authorised for use in laying birds producing eggs for human consumption.
Do not administer to layer replacement birds within 14 days of coming into lay.

5. PHARMACOLOGICAL PROPERTIES

Pharmacotherapeutic group: quinolone and quinoxaline antibacterials, fluoroquinolones.
ATCvet code: QJ01MA90

5.1 Pharmacodynamic properties

Enrofloxacin is a synthetic, broad spectrum antimicrobial, bactericidal in action and effective against a wide range of gram positive and gram negative bacteria as well as mycoplasmas**.** It inhibits the enzyme DNA-gyrase in the cell nuclei during replication of bacterial DNA. It also acts on bacterial cells during stationary phase by changing the permeability in the phospholipid cellular membranes.

Antibacterial spectrum
Enrofloxacin is active against many Gram-negative bacteria, against Gram-positive bacteria and *Mycoplasma* spp. In vitro susceptibility has been shown in strains of (i) Gram-negative species such as *Pasteurella multocida* and *Avibacterium (Haemophilus) paragallinarum* and (ii) *Mycoplasma gallisepticum* and *Mycoplasma synoviae*. (See section 4.5)

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 lead 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 laboratory animals and 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 humour.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Benzyl alcohol
Hydoxypropylmethylcellulose
Potassium hydroxide
Water, purified

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: 5 years.
Shelf-life after first opening the immediate packaging: 28 days.
Shelf-life after dilution: 24 hours.
Do not use after the expiry date stated on the label.

6.4. Special precautions for storage

Store in the original package in order to protect from light.

6.5 Nature and composition of immediate packaging

Cardboard box with 1 glass vial of 100 ml and measuring cup.
Polyethylene bottle of 1 litre and measuring cup.
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

KRKA, d.d., Novo mesto
Šmarješka cesta 6
8501 Novo mesto
Slovenia

8. MARKETING AUTHORISATION NUMBER

Vm 01656/4021

9. DATE OF FIRST AUTHORISATION

9 September 2005

10. DATE OF REVISION OF THE TEXT

June 2018

Approved: 27 June 2018