

1. NAME OF THE VETERINARY MEDICINAL PRODUCT

ENRO-K 100 mg/ml Solution for use in drinking water for chickens and turkeys.

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:

Active substances:

Enrofloxacin..... 100 mg

Excipients:

Qualitative composition of excipients and other constituents	Quantitative composition if that information is essential for proper administration of the veterinary medicinal product
Benzyl alcohol (E 1519)	14 mg
Potassium hydroxide	
Purified water	

An aqueous, clear, yellowish solution.

3. CLINICAL INFORMATION

3.1. Target species

Chickens and turkeys.

3.2. Indications for use for each target species

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

Chickens

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

Turkeys

Mycoplasma gallisepticum,
Mycoplasma synoviae,
Pasteurella multocida.

Enrofloxacin should be used where clinical experience, supported where possible by sensitivity testing of the causal organism, indicates enrofloxacin as the active substance of choice.

3.3. Contraindications

Do not use for prophylaxis.

Do not use in case of resistance / cross-resistance to (fluoro)quinolones is known to occur in the flock intended for treatment.

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

3.4. Special warnings

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

3.5. Special precautions for use

Special precautions for safe use in the target species:

Before use, header tanks should be emptied, thoroughly cleaned and then filled with a known volume of clean water before adding the required amount of product. The resulting mixture should be stirred.

Before use, header tanks should be inspected at regular intervals for presence of dust, algae formation and sedimentation.

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.

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.

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.

Do not exceed the recommended dose.

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

People 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

Special precautions for the protection of the environment:

Not applicable.

3.6. Adverse events

Chickens and turkeys:

Undetermined frequency (cannot be estimated from the available data):	Locomotion disturbances ¹
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¹as 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.

Reporting adverse events is important. It allows continuous safety monitoring of a veterinary medicinal product. Reports should be sent, preferably via a veterinarian, to either the marketing authorisation holder or its local representative or the national competent authority via the national reporting system. See the immediate packaging for respective contact details.

3.7. Use during pregnancy, lactation or lay

Laying birds

Do not use in birds in lay and within 4 weeks before the start of the laying period.

3.8. 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.

3.9. Administration routes and dosage

In drinking water use.

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.

This may be put directly into the header tanks, or via water proportioner systems.

Medication of the water supply should be continuous during the treatment period and no other source of water should be available.

Medicated water should be made every day, immediately prior to provision. Carefully calculate the total body mass to be treated and the total daily water consumption before each treatment.

The uptake of medicated water depends on age and clinical condition of the birds, ambient temperature, and light regime. In order to obtain the correct dosage the concentration of enrofloxacin may need to be adjusted accordingly. To ensure a correct dosage, body weight should be determined as accurately as possible.

Based on the recommended dose and the number and weight of animals to be treated, the exact daily concentration of the veterinary medicinal product should be calculated according to the following formula:

Total number of birds x Average body weight in kg x 0.1 = Total volume of the product (ml) per day

Care should be taken that the intended dose is completely ingested.
The use of suitably calibrated measuring equipment is recommended.

3.10. Symptoms of overdose (and where applicable, emergency procedures and antidotes)

Do not exceed the recommended dose. In accidental overdose there is no antidote and treatment should be symptomatic.

3.11 Special restrictions for use and special conditions for use, including restrictions on the use of antimicrobial and antiparasitic veterinary medicinal products in order to limit the risk of development of resistance

Not applicable.

3.12. Withdrawal periods

Chickens: Meat and offal: 7 days.
Turkeys: Meat and offal: 13 days.

Not for use in birds producing eggs for human consumption.

Do not use within 14 days before the start of the laying period.

4. PHARMACOLOGICAL INFORMATION

4.1. ATCvet code: QJ01MA90

4.2. Pharmacodynamics

Mode of action

Enrofloxacin is a synthetic, broad spectrum antimicrobial substance, belonging to the fluoroquinolone group of antibiotics. It 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.

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.

4.3. Pharmacokinetics

The pharmacokinetics of enrofloxacin is 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 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 and the aqueous humour.

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 glucuronic acid.

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

5. PHARMACEUTICAL PARTICULARS

5.1. Major incompatibilities

No information is available on potential interactions or incompatibilities of this veterinary medicinal product administered orally by mixing into drinking water containing biocidal products, feed additives or other substances used in drinking water.

Do not mix with any other veterinary medicinal product

Increased influx of the air (admixing CO₂ from the air) into medicated drinking water may result in precipitation of enrofloxacin.

High concentrations of calcium and magnesium in the water system may result in precipitation of enrofloxacin during intermediate dilution in the dosage devices.

5.2. Shelf life

Shelf life of the veterinary medicinal product as packaged for sale: 3 years

Shelf life after first opening the immediate packaging: 3 months

Shelf life after dilution according to directions: 24 hours

5.3. Special precautions for storage

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

5.4. Nature and composition of immediate packaging

White high-density polyethylene containers of three capacities: 250 ml jars, 1 L bottles and 5 L barrels. Containers are closed with a seal screw cap of the same material with induction disk.

Not all pack sizes may be marketed.

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

Medicines should not be disposed of via wastewater or household waste.

Use take-back schemes for the disposal of any unused veterinary medicinal product or waste materials derived thereof in accordance with local requirements and with any national collection systems applicable to the veterinary medicinal product concerned.

6. NAME OF THE MARKETING AUTHORIZATION HOLDER

LABORATORIOS KARIZOO, S.A.

7. MARKETING AUTHORISATION NUMBER

8. DATE OF FIRST AUTHORISATION

<Date of first authorisation:> <{DD/MM/YYYY}>

9. DATE OF THE LAST REVISION OF THE SUMMARY OF THE PRODUCT CHARACTERISTICS

<{MM/YYYY}>

10. CLASSIFICATION OF VETERINARY MEDICINAL PRODUCTS

Veterinary medicinal product subject to prescription.

Detailed information on this veterinary medicinal product is available in the [Union Product Database \(https://medicines.health.europa.eu/veterinary\)](https://medicines.health.europa.eu/veterinary).