

## 1. NAME OF THE VETERINARY MEDICINAL PRODUCT

Enroxal Flavour 150 mg tablets for dogs (BE, DE, ES, IT)  
Enroxil Flavour 150 mg tablets for dogs (AT)

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each tablet contains:

**Active substance:**

Enrofloxacin 150 mg

**Excipients:**

For a full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Tablet.

Round slightly biconvex, cream to light brownish tablets with possible visible white or darker spots, one side scored and bevel-edged.

The tablets can be divided into equal parts.

## 4. CLINICAL PARTICULARS

### 4.1 Target species

Dogs.

### 4.2 Indications for use, specifying the target species

In dogs:

Treatment of infections caused by strains of *Staphylococcus* spp., *E. coli*, *Haemophilus* spp. *Pasteurella* spp., and *Salmonella* spp. susceptible to enrofloxacin.

The product is indicated for treatment of mono or mixed bacterial infections of the respiratory, digestive and urinary tract, otitis externa, skin and wound infections.

### 4.3 Contraindications

Do not use in dogs less than 1 year of age or in exceptionally large breeds of dog with a longer growth period less than 18 months of age, as articular cartilage may be affected during the period of rapid growth.

Do not use in cases of hypersensitivity to the active substance, to any other quinolone or to any of the excipients.

Do not use in dogs having seizure disorders, since enrofloxacin may cause CNS stimulation.

Do not use in cases of known resistance to (fluoro)quinolones, as there exists almost complete cross resistance to other quinolones and complete cross resistance to other fluoroquinolones.

Please, see section 4.7.

### 4.4 Special warnings for each target species

None known.

### 4.5 Special precautions for use

#### **i) Special precautions for use in animals**

Fluoroquinolones should be reserved for the treatment of clinical conditions that 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. Official and local antimicrobial policies should be taken into account when the product is used. Use of the product deviating from the 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 cross resistance. If there is no clinical improvement within three days, further susceptibility testing and possibly a change in antimicrobial therapy should be considered.

Use the product with caution in dogs with severe renal or hepatic impairment.

Pyoderma is mostly secondary to an underlying disease. It is advisable to determine the underlying cause and to treat the animal accordingly.

The product is flavoured. To avoid accidental ingestion, the tablets should be stored out of reach of animals.

#### **ii) Special precautions to be taken by the person administering the veterinary medicinal product to animals**

People with known hypersensitivity to fluoroquinolones should avoid contact with the medicinal product.

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

Avoid contact with the eyes. In case of contact with the eyes, wash immediately with water.

Wash hands after use.

Do not smoke, eat or drink while handling the product.

#### **4.6 Adverse reactions (frequency and seriousness)**

Occasionally gastrointestinal disturbances may occur. Hypersensitivity reactions and CNS disturbances may be observed.

Possible joint cartilage alterations in growing puppies (see 4.3 Contraindications).

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**

Do not use in pregnant or lactating bitches.

#### **4.8 Interaction with other medicinal products and other forms of interaction**

Do not combine with tetracyclines, phenicols or macrolides because of potential antagonistic effects.

Do not combine with theophylline as this could lead to a prolonged elimination of this substance.

Do not use simultaneously with NSAIDs (convulsions may occur).

Concurrent use of flunixin and enrofloxacin should be under careful veterinary monitoring, as the interactions between these drugs may lead to adverse events related to delayed elimination.

Concurrent administration of magnesium, calcium or aluminum containing substances may be followed by retarded absorption of enrofloxacin.

Excessive alkalinisation of the urine should be avoided in animals subjected to rehydration.

## 4.9 Amounts to be administered and administration route

For oral use.

Tablets may be given directly into the mouth or masked in food.

The dosage rate of enrofloxacin is 5 mg/kg/day (i.e. one 150 mg tablet per 30 kg per day), for 5 days. In chronic and severe cases, treatment duration can be extended to 10 days.

To ensure a correct dosage body weight should be determined as accurately as possible to avoid underdosing. Do not exceed recommended dose.

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 case of overdose, sickness, vomiting, diarrhoea, and CNS/behavioural changes may occur and the treatment must be suspended.

## 4.11 Withdrawal period(s)

Not applicable.

# 5. PHARMACOLOGICAL PROPERTIES

Pharmacotherapeutic group: Antibacterials for systemic use. Fluoroquinolones.

ATCvet code: QJ01MA90

## 5.1 Pharmacodynamic properties

Enrofloxacin is an antibiotic that belongs to the chemical class of fluoroquinolones. The compound exerts bactericidal activity via mechanism of action based on the inhibition of the A subunit of DNA gyrase (topoisomerase II). In Gram positive bacteria the primary target is topoisomerase IV instead of topoisomerase II. With this mechanism enrofloxacin blocks the replication, transcription and recombination of bacterial DNA.

Fluoroquinolones also act on bacterial cells during stationary phase by changing the permeability in the phospholipid cellular membranes. These mechanisms explain the rapid loss of viability of the bacteria exposed to enrofloxacin. Inhibitory and bactericidal concentrations of enrofloxacin are strongly correlated. They are either equal, or differ in 1-2 dilution steps.

Antibacterial spectrum: *Staphylococcus* spp, *Escherichia coli*, *Haemophilus* spp., *Pasteurella* spp., *Salmonella* spp.

The enrofloxacin *in vitro* activity against pathogens isolated from canine respiratory, urinary and soft tissue infections in Europe, is good: MIC<sub>50</sub> values are comprised between 0.03 and 0.12 µg/ml for *Escherichia coli*, 0.015 µg/ml for *Pasteurella* spp., and 0.12 µg/ml for *Staphylococcus* spp. Susceptibility breakpoints for enrofloxacin used in Enterobacteriaceae and *Staphylococcus* spp. (in dogs and cats) have been determined as ≤ 0,5 µg/ml for sensitive, 1-2 µg/ml for intermediate and ≥ 4 µg/ml for resistant bacterial strains (CLSI, 2013).

Several Susceptibility pan-European surveillances to investigate the susceptibility to enrofloxacin of bacterial strains isolated to several pathologies in target species have been conducted. See main results below.

#### Susceptibility of dogs respiratory pathogens

Bacteria	Resistant (%)	MIC50	MIC90
<i>S. intermedius</i>	4.1	0.12	0.5
<i>E. coli</i>	12.5	0.06	>8
<i>P. multocida</i>	NA	0.015	0.015

NA: No breakpoints were available; standardised agar dilution methodology (Morrisey et al., 2016)

#### Susceptibility of dogs urinary tract pathogens

Bacteria	Resistant (%)	MIC50	MIC90
<i>E. coli</i>	3.9	0.03	0.06
<i>S. intermedius</i>	3.0	0.12	0.25

Standardized agar dilution methodology (Moyaert et al., 2017)

#### Susceptibility of dogs pathogens involved in skin infections.

Bacteria	Resistant (%)	MIC <sub>50</sub> (µg/ml)	MIC <sub>90</sub> (µg/ml)
<i>S. pseudointermedius</i>	5.2	0.12	0.5
<i>S. aureus</i>	2.2	0.12	0.25
<i>E. coli</i>	3.7	0.06	0.12
<i>Pasteurella</i> spp.	NA	0.015	0.015

NA: No breakpoints were available (Ludwig et al., 2016)

Resistance to fluoroquinolones occurs by chromosomal mutation with following mechanisms: decrease of the bacterial cell wall permeability, expression change of genes coding for efflux pumps or mutations in genes encoding enzymes responsible for molecule binding. Plasmid-mediated resistance to fluoroquinolones confer only decreased susceptibility of bacteria, however, it can facilitate development of mutations in genes of target enzymes and can be transferred horizontally. Depending on the underlying resistance mechanism cross-resistance to other (fluoro)quinolones and co-resistance to other antimicrobial classes can occur.

## 5.2 Pharmacokinetic particulars

Enrofloxacin has relatively high bioavailability after oral administration in almost all of the species studied. In dogs, orally dosed with enrofloxacin, the maximum plasma concentration of enrofloxacin is reached after 1 hour, and antibacterial activity is still maintained after 24 hours. Concomitant administration of compounds containing multivalent cations (antacids, milk or milk replacers) decreases the oral bioavailability of fluoroquinolones.

Fluoroquinolones are characterized by extensive distribution to body fluids and tissues, reaching in some concentrations higher than those found in plasma. Fluoroquinolones are widely distributed in skin, bone and semen as well as in the anterior and posterior chambers of the eye; they cross the placenta and brain barrier. High levels are found in phagocytic cells (alveolar macrophages, neutrophils); therefore fluoroquinolones are effective against intracellular microorganisms.

The degree of metabolism varies between species and is around 50-60%. Enrofloxacin is biotransformed in the liver, to an active metabolite ciprofloxacin. In general, metabolism occurs via hydroxylation and oxidation reactions. Other reactions involved are N-dealkylation and glucuronic acid conjugation.

Excretion occurs via the bile and kidney, the latter being predominant. The renal excretion is by glomerular filtration and tubular excretion.

In dogs, orally administered 5 mg / kg enrofloxacin rapid absorption was observed and concentrations of enrofloxacin after 4 h were 0.3 µg / ml in plasma, 3.3 µg / ml in alveolar macrophages and 4.8 µg / ml in lung epithelial fluid. The bioavailability was approximately 80%.

## 6. PHARMACEUTICAL PARTICULARS

## **6.1 List of excipients**

Mannitol  
Maize starch  
Sodium starch glycolate (type A)  
Meat flavour 10022  
Sodium laurilsulphate  
Basic butylated methacrylate copolymer  
Dibutyl sebacate  
Croscarmellose sodium  
Silica, colloidal anhydrous  
Talc  
Magnesium stearate

## **6.2 Major incompatibilities**

Not applicable.

## **6.3 Shelf life**

Shelf-life of the veterinary medicinal product as packaged for sale: 3 years  
Return any halved tablet to the opened strip-pack and use within 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**

Polyamide/Aluminium/Polyvinyl chloride film (OPA/Al/PVC), heat sealed with aluminium foil containing 10 tablets / blister.

### Package sizes:

Cardboard carton with 10 blister packs (100 tablets)  
Cardboard carton with 1 blister pack (10 tablets)

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**

*To be completed nationally.*

## **8. MARKETING AUTHORISATION NUMBER(S)**

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

**10. DATE OF REVISION OF THE TEXT**

**PROHIBITION OF SALE, SUPPLY AND/OR USE**

- *To be supplied only on veterinary prescription.*
- *Administration by a veterinary surgeon or under their direct responsibility*

**PARTICULARS TO APPEAR ON THE OUTER PACKAGE****Box****1. NAME OF THE VETERINARY MEDICINAL PRODUCT**

Enroxal Flavour 150 mg tablets for dogs (BE, DE, ES, IT)  
Enroxil Flavour 150 mg tablets for dogs (AT)  
Enrofloxacin

**2. STATEMENT OF ACTIVE SUBSTANCES**

Each tablet contains 150 mg of Enrofloxacin.

**3. PHARMACEUTICAL FORM**

Tablets

**4. PACKAGE SIZE**

10 tablets  
100 tablets

**5. TARGET SPECIES**

Dogs.

**6. INDICATION(S)****7. METHOD AND ROUTE(S) OF ADMINISTRATION**

For oral use  
Read the package leaflet before use.  
The tablet is given orally once daily or as a divided dose twice daily with or without food.

**8. WITHDRAWAL PERIOD****9. SPECIAL WARNING(S), IF NECESSARY**

Read the package leaflet before use.  
Return any halved tablet to the opened strip-pack and use within 24 hours.  
User warnings - please read the package leaflet.

**10. EXPIRY DATE**

EXP:

**11. SPECIAL STORAGE CONDITIONS**

1.3.1	Enrofloxacin flavour
SPC, Labeling and Package Leaflet	DE, IT, BE, AT

**12. SPECIAL PRECAUTIONS FOR THE DISPOSAL OF UNUSED PRODUCTS OR WASTE MATERIALS, IF ANY**

Dispose of waste material in accordance with local requirements.

**13. THE WORDS “FOR ANIMAL TREATMENT ONLY” AND CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE, if applicable**

For animal treatment only. To be supplied only on veterinary prescription.

**14. THE WORDS “KEEP OUT OF THE SIGHT AND REACH OF CHILDREN”**

Keep out of the sight and reach of children.

**15. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

*To be completed nationally.*

**16. MARKETING AUTHORISATION NUMBER(S)**

**17. MANUFACTURER’S BATCH NUMBER**

Lot:



1.3.1	Enrofloxacin flavour
SPC, Labeling and Package Leaflet	DE, IT, BE, AT

## MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS

### Blisters

#### 1. NAME OF THE VETERINARY MEDICINAL PRODUCT

Enroxal Flavour 150 mg tablets for dogs (BE, DE, ES, IT)  
 Enroxil Flavour 150 mg tablets for dogs (AT)  
 Enrofloxacin

#### 2. NAME OF THE MARKETING AUTHORISATION HOLDER

*To be completed nationally.*

#### 3. EXPIRY DATE

EXP:

#### 4. BATCH NUMBER

Lot:

#### 5. THE WORDS “FOR ANIMAL TREATMENT ONLY”

For animal treatment only.

1.3.1	Enrofloxacin flavour
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### PACKAGE LEAFLET:

**Enroxal Flavour 150 mg tablets for dogs (BE, DE, ES, IT)**  
**Enroxil Flavour 150 mg tablets for dogs (AT)**

#### 1. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER AND OF THE MANUFACTURING AUTHORISATION HOLDER RESPONSIBLE FOR BATCH RELEASE, IF DIFFERENT

Marketing authorisation holder:  
*To be completed nationally.*

Manufacturer responsible for batch release:  
 KRKA, d.d., Novo mesto, Šmarješka cesta 6, 8501 Novo mesto, Slovenia  
 TAD Pharma GmbH, Heinz-Lohmann-Straße 5, 27472 Cuxhaven, Germany  
 KRKA - FARMA d.o.o., V. Holjevca 20/E, 10450 Jastrebarsko, Croatia

#### 2. NAME OF THE VETERINARY MEDICINAL PRODUCT

Enroxal Flavour 150 mg tablets for dogs (BE, DE, ES, IT)  
 Enroxil Flavour 150 mg tablets for dogs (AT)  
 Enrofloxacin

#### 3. STATEMENT OF THE ACTIVE SUBSTANCE(S) AND OTHER INGREDIENT(S)

Each tablet contains:

##### **Active substance:**

Enrofloxacin 150 mg

##### **Excipients, q.s.**

Round slightly biconvex, cream to light brownish tablets with possible visible white or darker spots, one side scored and bevel-edged. The tablets can be divided into equal parts.

#### 4. INDICATION(S)

In dogs:

Treatment of infections caused by strains of *Staphylococcus* spp., *E. coli*, *Haemophilus* spp. *Pasteurella* spp., and *Salmonella* spp. susceptible to enrofloxacin.  
 The product is indicated for treatment of mono or mixed bacterial infections of the respiratory, digestive and urinary tract, otitis externa, skin and wound infections.

#### 5. CONTRAINDICATIONS

1.3.1	Enrofloxacin flavour
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Do not use in dogs less than 1 year of age or in exceptionally large breeds of dog with a longer growth period less than 18 months of age, as articular cartilage may be affected during the period of rapid growth.

Do not use in cases of hypersensitivity to the active substance, to any other quinolone or to any of the excipients.

Do not use in dogs having seizure disorders, since enrofloxacin may cause stimulation of the central nervous system.

Do not use in cases of known resistance to (fluoro)quinolones, as there exists almost complete cross resistance to other quinolones and complete cross resistance to other fluoroquinolones.

Please, see section 12 regarding use in pregnant and lactating animals.

## 6. ADVERSE REACTIONS

Occasionally gastrointestinal disturbances may occur. Hypersensitivity reactions and CNS disturbances may be observed.

Possible joint cartilage alterations in growing puppies (see 5. Contraindications).

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).

If you notice any side effects, even those not already listed in this package leaflet or you think that the medicine has not worked, please inform your veterinary surgeon.

Alternatively you can report via your national reporting system

[https://www.aemps.gob.es/vigilancia/medicamentosVeterinarios/docs/formulario\\_tarjeta\\_verde.doc](https://www.aemps.gob.es/vigilancia/medicamentosVeterinarios/docs/formulario_tarjeta_verde.doc)

## 7. TARGET SPECIES

Dogs.

## 8. DOSAGE FOR EACH SPECIES, ROUTE(S) AND METHOD OF ADMINISTRATION

For oral use.

The dosage rate of enrofloxacin is 5 mg/kg/day (i.e. one 150 mg tablet per 30 kg per day), for 5 days.

In chronic and severe cases, treatment duration can be extended to 10 days.

## 9. ADVICE ON CORRECT ADMINISTRATION

Tablets may be given directly into the mouth or masked in food.

To ensure a correct dosage body weight should be determined as accurately as possible to avoid underdosing.

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.

## 10. WITHDRAWAL PERIOD

1.3.1	Enrofloxacin flavour
SPC, Labeling and Package Leaflet	DE, IT, BE, AT

Not applicable.

## 11. SPECIAL STORAGE PRECAUTIONS

Keep out of the sight and reach of children.

Return any halved tablet to the opened strip-pack and use within 24 hours.

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

Do not use this veterinary medicinal product after the expiry date which is stated on the label after EXP. The expiry date refers to the last day of that month.

## 12. SPECIAL WARNING(S)

### Special precautions for use in animals:

Fluoroquinolones should be reserved for the treatment of clinical conditions that 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. Official and local antimicrobial policies should be taken into account when the product is used. Use of the product deviating from the 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 cross resistance. If there is no clinical improvement within three days, further susceptibility testing and possibly a change in antimicrobial therapy should be considered.

Use the product with caution in dogs with severe renal or hepatic impairment.

Pyoderma is mostly secondary to an underlying disease. It is advisable to determine the underlying cause and to treat the animal accordingly.

The product is flavoured. To avoid accidental ingestion, the tablets should be stored out of reach of animals.

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

People with known hypersensitivity to fluoroquinolones should avoid contact with the veterinary medicinal product.

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

Avoid contact with the eyes. In case of contact with the eyes, wash immediately with water.

Wash hands after use.

Do not smoke, eat or drink while handling the product.

### Use during pregnancy, lactation or lay:

Do not use in pregnant or lactating bitches.

### Interaction with other medicinal products and other forms of interaction:

Do not combine with other drugs, such as tetracyclines, phenicols or macrolides because there is a potential that these drugs nullify the desired effect.

Do not combine with theophylline (a drug used in medicine as a bronchial dilator) as this could lead to a prolonged elimination of this substance.

Do not use simultaneously with NSAIDs (convulsions may occur).

Concurrent use of flunixin and enrofloxacin should be under careful veterinary monitoring, as the interactions between these drugs may lead to adverse events related to delayed elimination.

Concurrent administration of magnesium, calcium or aluminum containing substances may be followed by retarded absorption of enrofloxacin.

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Excessive alkalinisation of the urine should be avoided in animals subjected to rehydration.

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

In case of overdose, sickness, vomiting, diarrhoea, and CNS/behavioural changes may occur and the treatment must be suspended.

Do not exceed recommended dose.

### **13. SPECIAL PRECAUTIONS FOR THE DISPOSAL OF UNUSED PRODUCT OR WASTE MATERIALS, IF ANY**

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

Ask your veterinary surgeon how to dispose of medicines no longer required. These measures should help to protect the environment.

### **14. DATE ON WHICH THE PACKAGE LEAFLET WAS LAST APPROVED**

### **15. OTHER INFORMATION**

Package sizes:

Cardboard carton with 10 blister packs (100 tablets)

Cardboard carton with 1 blister pack (10 tablets)

Not all pack sizes may be marketed.

For any information about this veterinary medicinal product, please contact the local representative of the marketing authorisation holder.