

## **SUMMARY OF PRODUCT CHARACTERISTICS**

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

Powerflox 100 mg/ml solution for injection for cattle and pigs

### **2. QUALITATIVE AND QUANTITATIVE COMPOSITION**

1 ml of solution for injection contains:

**Active substance:**

Enrofloxacin	100 mg
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**Excipient(s):**

n-butyl alcohol as antimicrobial preservative	30 mg
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For the full list of excipients, see section 6.1.

### **3. PHARMACEUTICAL FORM**

Solution for injection

Clear yellow solution practically free from particles.

### **4. CLINICAL PARTICULARS**

#### **4.1 Target species**

Cattle and pigs.

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

**Cattle:**

Treatment of infections of the respiratory tract caused by enrofloxacin susceptible strains of *Pasteurella multocida*, *Mannheimia haemolytica* and *Mycoplasma* spp.

Treatment of acute severe mastitis caused by enrofloxacin susceptible strains of *Escherichia coli*.

Treatment of infections of the alimentary tract caused by enrofloxacin susceptible strains of *Escherichia coli*.

Treatment of septicaemia caused by enrofloxacin susceptible strains of *Escherichia coli*.

Treatment of acute mycoplasma-associated arthritis due to enrofloxacin susceptible strains of *Mycoplasma bovis* in cattle less than 2 years old.

**Pigs:**

Treatment of infections of the respiratory tract caused by enrofloxacin susceptible strains of *Pasteurella multocida*, *Mycoplasma* spp. and *Actinobacillus pleuropneumoniae*.

Treatment of infections of the urinary tract caused by enrofloxacin susceptible strains of *Escherichia coli*.

Treatment of post-partum dysgalactiae syndrome, PDS (MMA syndrome) caused by enrofloxacin susceptible strains of *Escherichia coli* and *Klebsiella* spp.

Treatment of infections of the alimentary tract caused by enrofloxacin susceptible strains of *Escherichia coli*.

Treatment of septicaemia caused by enrofloxacin susceptible strains of *Escherichia coli*.

#### **4.3 Contraindications**

Do not use for prophylaxis.

Do not use in case of resistance against quinolones.

Do not use in case of disturbances in growth of cartilages and/or during injury of locomotory system particularly on functionally loaded joints or due to body weight loaded joints.

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

Do not use in growing horses because of possible deleterious damage on articular cartilage.

#### **4.4 Special warnings for each target species**

None.

#### **4.5 Special precautions for use**

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

The safety of the product has not been established in pigs or calves when administered by the intravenous route and use of this route of administration is not recommended in these animal groups.

Use of the product should be based on susceptibility testing and take into account official and local antimicrobial policies.

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.

It is prudent to reserve enrofloxacin for the treatment of clinical conditions which have responded poorly to other classes of antimicrobials.

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 potential for cross resistance.

Treatment should not be repeated if an allergic reaction occurs.

Enrofloxacin is partially excreted through the kidney. In case of the kidney's functional failure slower excretion should be taken into account.

Degenerative changes of articular cartilage were observed in calves treated orally with 30 mg enrofloxacin/kg bw during 14 days.

The use of enrofloxacin in growing lambs at the recommended dose for 15 days caused histological changes in the articular cartilage, not associated with clinical signs.

Do not re-inject into the same injection site.

The cap may be safely punctured up to 40 times. When treating groups of animals, use a draw-off needle.

Only the 50 ml vial should be used to treat small piglets.

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

People with known hypersensitivity to (fluoro)quinolones should avoid any contact with the product.

Direct contact with the skin should be avoided because of sensitisation, contact dermatitis and possible hypersensitivity reactions.

Wear gloves.

This product is an alkaline solution.

Wash any splashes from skin and eyes immediately with water.

Do not eat, drink or smoke whilst using the product.

Care should be taken to avoid accidental self-injection. If accidental injection occurs, seek medical advice immediately.

Wash hands after use.

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

Local tissue reactions may occasionally occur at the injection site.

In cattle, gastrointestinal disturbances may occasionally occur.

#### **4.7 Use during pregnancy, lactation or lay**

Enrofloxacin can be used during pregnancy and lactation.

#### **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.

#### **4.9 Amounts to be administered and administration route**

Intravenous, subcutaneous or intramuscular use.

Repeated injections should be made at different injection sites.

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

##### **Cattle:**

5 mg of enrofloxacin/kg bw, corresponding to 1 ml/20 kg bw, once daily for 3-5 days.

Acute mycoplasma-associated arthritis due to enrofloxacin susceptible strains of *Mycoplasma bovis* in cattle less than 2 years old: 5 mg of enrofloxacin/kg bw, corresponding to 1 ml/20 kg bw, once daily for 5 days.

The product can be administered by slow intravenous or subcutaneous administration.

Acute mastitis caused by *Escherichia coli*: 5 mg enrofloxacin/kg bw, corresponding to 1 ml/20 kg bw, by slow intravenous injection once daily for two consecutive days.

The second dose may be administered by the subcutaneous route. In this case, the withdrawal period following subcutaneous injection applies.

Not more than 10 ml should be administered at one subcutaneous injection site.

Calves: Not more than 5 ml should be administered at one subcutaneous injection site.

**Pigs:**

2.5 mg of enrofloxacin/kg bw, corresponding to 0.5 ml/20 kg bw, once daily by intramuscular injection for 3 days.

Alimentary tract infection or septicaemia caused by *Escherichia coli*: 5 mg of enrofloxacin/kg bw, corresponding to 1 ml/20 kg bw, once daily by intramuscular injection for 3 days.

In pigs, the injection should be made in the neck at the ear base.

Not more than 3 ml should be administered at one intramuscular injection site.

If there is no clinical improvement within two to three days, further susceptibility testing and possibly a change in antimicrobial therapy should be considered.

Do not exceed the recommended dose.

Normal sterile precautions should be taken.

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

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

**4.11 Withdrawal periods**

**Cattle:**

Following intravenous injection:

Meat and offal: 5 days.

Milk: 3 days.

Following subcutaneous injection:

Meat and offal: 12 days.

Milk: 4 days.

**Pigs:**

Meat and offal: 13 days.

**5. PHARMACOLOGICAL PROPERTIES**

**Pharmacotherapeutic group:** quinolone and quinoxaline antibacterials, 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 noncovalent 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*, *Mannheimia haemolytica*, *Pasteurella* spp. (e.g. *Pasteurella multocida*), 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 particularsproperties

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 and the foetus in pregnant animals.

## 6. PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

n-butyl alcohol  
Potassium hydroxide  
Water for injections

## **6.2 Incompatibilities**

None known.

## **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

## **6.4 Special precautions for storage**

Do not store above 25°C.

Keep the vial in the outer carton in order to protect from light.

## **6.5 Nature and composition of immediate packaging**

Cardboard box with 1 amber Type I glass vial of 50 or 100 ml with a grey bromobutyl rubber stopper and aluminium cap.

Cardboard box with 1 amber Type II glass vial of 50 or 100 ml with a grey bromobutyl rubber stopper and aluminium cap.

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**

Virbac S.A.  
1ère avenue - 2065m - L.I.D.  
06516 Carros Cedex  
France

## **8. MARKETING AUTHORISATION NUMBER**

**Vm** 05653/4147

## **9. DATE OF FIRST AUTHORISATION**

**Date:** 22 July 2009

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

**Date:** November 2014



Approved: 18 December 2014