# Summary of Product Characteristics

## 1 NAME OF THE VETERINARY MEDICINAL PRODUCT

PULMODOX 5 % PREMIX

## 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

**Each gram contains**
**Active substance(s)**

Doxycycline ..... 50 mg
(as hyclate form)

**Excipients**

For a full list of excipients, see section 6.1.

## 3 PHARMACEUTICAL FORM

Premix for medicatedfeeding stuff.

## 4 CLINICAL PARTICULARS

### 4.1 Target Species

Pigs (after weaning).

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

Prevention of clinical respiratory disease due to *Pasteurella multocida* and *Mycoplasma hyopneumoniae* sensitive to doxycycline. The presence of disease in the herd should be established before treatment.

### 4.3 Contraindications

Do not use in case of hypersensitivity to the active substance or to any of the excipients.
Do not use in animals with hepatic dysfunction.
See section 4.7.

### 4.4 Special warnings for each target species

The uptake of medication by animals can be altered as a consequence of illness. In case of insufficient feed intake, animals should be treated parenterally.

## 4.5 Special precautions for use

### i) Special precautions for use in animals

Inappropriate use of the product may increase the prevalence of bacteria resistant to tetracycline due to the potential for cross resistance. Use of the product should be based on susceptibility testing and take into account official and local antimicrobial policies.
Do not use when tetracycline resistance has been detected in the herd/flock due to the potential for cross resistance.

Consideration should be given to improvement of management practice on the farm, mainly in hygiene management, ventilation and pig management avoiding stress conditions.

### ii) Special precautions to be taken by the person administering the medicinal products to animals

- Do not handle this product in case of known sensitisation to tetracyclines.
- Handle this product with care to avoid exposure during incorporation of premix into feed and administration of medicated feed to the animals, taking all recommended precautions:
- Take adequate measures to avoid dust formation when incorporation of the product into feed is occurring.
- Wear a dust mask (in compliance with EN140FFP1), gloves, overalls, and approved safety glasses.
- Avoid contact with skin and eyes. Rinse thoroughly with water in case of exposure.
- Do not smoke, eat, or drink when handling the product.
- If you develop symptoms following exposure such as skin rash, you should seek medical advice and show the present warning to the doctor. Swelling of the face, lips or eyes or difficulty with breathing are more serious symptoms and require urgent medical attention.

## 4.6 Adverse reactions (frequency and seriousness)

As for all tetracycline, allergic reactions and photosensitivity may occur. In case of occurrence of allergic reaction, the discontinuation of the treatment should be recommended.

## 4.7 Use during pregnancy, lactation or lay

Studies performed in laboratory animals (rat, rabbit), did not show a teratogenic, embryotoxic or maternotoxic effect of doxycycline. Safety of the product in pregnant and nursing sows was not demonstrated. Use of the product in pregnant or nursing females is not recommended.

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

Do not incorporate the medicated premix in feed overloaded with polyvalent cations such as $Ca^{2+}$, $Mg^{2+}$, $Zn^{2+}$and $Fe^{3+}$, because the formation of doxycycline complexes with these cations is possible. Do not administer together with antacids, kaolin and iron preparations. As tetracyclines are bacteriostatic antimicrobials, do not administer in conjunction with bactericidal antibiotics like beta-lactames. It is advised that the interval between administration of other products containing polyvalent cations should be 1-2 hours because they limit the absorption of tetracycline.
Doxycycline increases the action of anticoagulants.

## 4.9 Amounts to be administered and administration route

In feed use.
12.5 mg of doxycyline/kg body weight/day for 8 consecutive days. (i.e. 250 mg of doxycycline per kg of complete feed- 5 kg premix per ton of animal feed – according to a daily feed intake of 50 g/kg bw/d).
This premix has to be incorporated in a complete feed, the rate of incorporation should not be below 5 kg/ton.
After incorporation into feed and if for use in the form of pellets, the following conditions have been shown to be suitable: Temperature before extrusion at 55°C (2 min) and temperature after extrusion at 73 °C (2 min).

The intake of medicated feed depends on the clinical condition of the animals. In order to obtain the correct dosage, the concentration of doxycycline has to be adjusted accordingly. To ensure a correct dosage body weight should be determined as accurately as possible to avoid underdosing.

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

An increase of kidney weight was reported in the safety study in pigs at 3 fold the proposed dosage regimen after a treatment duration 2.6 fold the proposed duration. This finding was not confirmed either from clinical pathological nor from histopathological findings.

## 4.11 Withdrawal period(s)

Meat and offals: 7 days

## 5 PHARMACOLOGICAL or IMMUNOLOGICAL PROPERTIES

Pharmacotherapeutic group: antibacterial for systemic use (tetracycline)
ATC Vet code: QJ01AA02

## 5.1 Pharmacodynamic properties

Doxycycline is a bacteriostatic antibiotic belonging to the tetracycline family. Given its more lipid-soluble feature that makes the diffusion through the bacterial membrane easier, doxycycline exerts a greater *in vitro* activity than first generation tetracyclines. After penetration into bacteria, doxycycline acts by inhibiting protein synthesis.
Doxycycline exerts its antibacterial activity especially against *Pasteurella multocida* and against *Mycoplasma hyopneumoniae* isolated from pig respiratory infections.

## 5.2 Pharmacokinetic particulars

The bioavailability of doxycycline administered per os is about 33 %. The binding rate to plasma proteins is 93%. At steady state, the volume of distribution (Vss) of doxycycline is 1.2 l/kg. After oral administration of doxycycline at the recommended dose of 12.5 mg/kg/day for 8 days, average steady state concentration is 1.2 µg/ml in plasma (with a steady state Cmin of 0.9 µg/ml and a steady state Cmax of 1.5 µg/ml). The accumulation factor (between first and last days) is 1.8. The ratio between tissue- and plasma concentration is 1.3 for lung and 2.3 for nasal mucosa.

## 6 PHARMACEUTICAL PARTICULARS

## 6.1 List of excipients

Whole meal wheat

## 6.2 Major incompatibilities

The formation of doxycycline complexes with bivalent $Ca^{2+}$ and trivalent $Fe^{3+}$ cations is possible.
In the absence of compatibility studies, this veterinary medicinal product must not be mixed with other veterinary medicinal product.

### 6.3 Shelf-life

Shelf-life of the veterinary medicinal product as packaged for sale: 2 years.
Shelf-life of the premix after incorporation in the feed: 3 months.

### 6.4 Special precautions for storage

Do not store above 30°C.

### 6.5 Nature and composition of immediate packaging

- Small format 1 paper layer / complex paper/LDPE/Alu / 1 paper layer /polyethylene low density bag (5 kg).
- Large format 1 paper layer / complex paper/LDPE/Alu / 1 paper layer / polyethylene low density bag (25 kg).
- 5 kg white polypropylene bucket containing a 5 kg transparent polyethylene bag.

Not all pack sizes may be marketed.

### 6.6 Special precautions for the disposal of unused veterinary medicinal products or waste materials derived from the use of such products

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

## 7 MARKETING AUTHORISATION HOLDER

Virbac
1ère avenue
2065 M LID
06516 Carros
France

## 8 MARKETING AUTHORISATION NUMBER(S)

VPA10988/062/001

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

Date of first authorisation: 12 January 2001
Date of last renewal: 06 August 2010

## 10 DATE OF REVISION OF THE TEXT

July 2018