SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE VETERINARY MEDICINAL PRODUCT

Norfenicol 300 mg/ml Solution for Injection for Cattle and Pigs

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each ml contains:

Active Substance:

Florfenicol	300 mg

For the full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Solution for Injection.
A light yellow to straw coloured solution.

4. CLINICAL PARTICULARS

4.1 Target species

Cattle and Pigs.

4.2 Indications for use, specifying the target species

Cattle:
Treatment of respiratory tract infections in clinically diseased cattle due to *Mannheimia haemolytica, Pasteurella multocida* and *Histophilus somni*, susceptible to florfenicol.

Pigs:
Treatment of acute outbreaks of respiratory disease caused by strains of *Actinobacillus pleuropneumoniae* and *Pasteurella multocida* susceptible to florfenicol.

4.3 Contraindications

Do not use in adult bulls or boars intended for breeding purposes.
Do not use in cases of hypersensitivity to the active substance or to any of the excipients.
Do not use in cases of known resistance to florfenicol.

4.4 Special warnings

None.

4.5 Special precautions for use

Special precautions for use in animals

Do not use in piglets of less than 2 kg.
Use a suitable draw-off needle or automatic dosing syringe to avoid excessive puncturing of the closure. Florfenicol should be used for treatment of severe infections only.
Use of the product should be based on susceptibility testing of the bacteria isolated from the animal. If this is not possible, therapy should be based on local (regional, farm level) epidemiological information about susceptibility of the target bacteria.
Official national and regional 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 the florfenicol and may decrease the effectiveness of treatment with other antimicrobials (e.g. ceftiofur) due to the potential for cross resistance.

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

This product may cause allergic reactions in those that are sensitive.
People with known hypersensitivity to florfenicol or any of the excipients should avoid contact with the veterinary medicinal product.
Take care to avoid accidental self-injection. In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician.
The product may cause irritation if it comes into contact with the skin, mucous membranes or eyes. Avoid direct contact with skin, mouth and eyes. In case of contact with the skin or eyes, rinse the affected area immediately with plenty of clean water. If accidental ingestion occurs, rinse the mouth with plenty of water and seek medical advice immediately.
Wash hands after use.

4.6 Adverse reactions (frequency and seriousness)

Cattle:
Administration of the product by the intramuscular or subcutaneous route may cause inflammatory lesions (swelling and hardness) at the injection site which may persist for 31 days. A decrease in food consumption and transient softening of the faeces may occur during the treatment period. The treated animals recover quickly and completely upon termination of treatment.
In very rare cases, anaphylactic shock has been reported in cattle.

Pigs:

Commonly observed adverse effects are transient diarrhoea and/or peri-anal and rectal erythema/oedema which may affect 50 % of the animals.These effects can be observed for one week.
Under field conditions approximately 30 % of treated pigs presented with pyrexia (40˚C) associated with either moderate depression or moderate dyspnoea a week or more after administration of the second dose.

The frequency of adverse reactions is defined using the following convention:
- very common (more than 1 in 10 animals displaying adverse reaction(s) during the course of one treatment)
- common (more than 1 but less than 10 animals in 100 animals)
- uncommon (more than 1 but less than 10 animals in 1,000 animals)
- rare (more than 1 but less than 10 animals in 10,000 animals)
- very rare (less than 1 animal in 10,000 animals, including isolated reports)

4.7 Use during pregnancy, lactation or lay

Studies in laboratory animals have not revealed any evidence of embryo- or foeto-toxic effects for florfenicol. However, safety during pregnancy and lactation has not been investigated in the target species. Use only accordingly to the benefit/risk assessment by the responsible veterinarian.

4.8 Interaction with other medicinal products and other forms of interaction

None known.

4.9 Amounts to be administered and administration route

To ensure correct dosage body weight should be determined as accurately as possible.
Swab septum before removing each dose.
Use a dry sterile needle and syringe.
Do not broach the vial more than 25 times.

Cattle:
Intramuscular Injection: 20 mg/kg bodyweight (1 ml/15 kg) to be administered twice 48 hours apart using a 16-gauge needle.
Subcutaneous Injection: 40 mg/kg bodyweight (2 ml/15 kg) to be administered once only using a 16-gauge needle.

The dose volume given at any one injection site should not exceed 10 ml.
The injection should only be given in the neck.

Pigs:
Intramuscular Injection: 15 mg/kg bodyweight (1 ml per 20 kg) into the neck muscle twice at 48 hour intervals using a 16-gauge needle.
The volume administered per injection site should not exceed 3 ml.

It is recommended to treat cattle and Pigs in the early stages of disease and to evaluate the response to treatment within 48 hours after the second injection. If clinical signs of respiratory disease persist 48 hours after the last injection, treatment

should be changed using another formulation or another antibiotic and continued until clinical signs have resolved.

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

Cattle:
None.

Pigs:
After administration of three times the recommended dose or more, a reduction in feeding, hydration and weight gain has been observed. After administration of five times the recommended dose or more, vomiting has also been noted.

4.11 Withdrawal period

Cattle
Meat and offal:
By intramuscular injection (at 20 mg/kg, twice): 39 days
By subcutaneous injection (at 40 mg/kg, once): 44 days

Milk: Not permitted for use in lactating animals producing milk for human consumption.

Pigs
Meat and offal: 22 days

5. PHARMACOLOGICAL PROPERTIES

Pharmacotherapeutic group: Antibacterial for systemic use (Amphenicols)
ATCVet code: QJ01BA90

5.1 Pharmacodynamic properties

Florfenicol is a synthetic broad spectrum antibiotic effective against most Gram-positive and Gram-negative bacteria isolated from domestic animals. Florfenicol acts by inhibiting protein synthesis at the ribosomal level and is bacteriostatic. However, *in vitro* studies of florfenicol demonstrate bactericidal activity against *Mannheimia haemolytica, Pasteurella multocida, Actinobacillus pleuropneumoniae* and *Histophilus somni.*

In vitro testing has shown that florfenicol is active against the bacterial pathogens most commonly isolated in respiratory diseases in cattle (including *Pasteurella multocida*, *Mannheimia haemolytica*, and *Histophilus somni*) and in pigs (including *Actinobacillus pleuropneumoniae* and *Pasteurella multicida*). Acquired resistance to florfenicol is mediated by efflux pump resistance associated with a *floR* gene. Such resistance has not yet been identified in the target pathogens except for *Pasteurella multocida*. Resistance to florfenicol and other antimicrobials has been identified in the food-borne pathogen *Salmonella typhimurium* and co-resistance to florfenicol and other antimicrobials (e.g. ceftiofur) has been identified in the microrganisms from the family *Enterobacteriaceae.*

5.2 Pharmacokinetic particulars

In Cattle:
The administration of the product by the subcutaneous route at the recommended dosage of 40 mg/kg maintains bovine efficacious blood levels (i.e. above the MIC_{90} of the main respiratory pathogens) for 63 hours. Maximum serum concentration (Cmax) of approximately 5µg/ml, occurs at approximately 5.3 hours (Tmax) after dosing. The mean serum concentration 24 hours after dosing is 2 µg/ml.

Intramuscular administration at the recommended dose of 20 mg/kg maintains efficacious blood levels in cattle for 48 hours. Maximum mean serum concentration (Cmax) of 3.37 µg/ml occurs at 3.3 hours (Tmax) after dosing. The mean serum concentration 24 hours after dosing is 0.77 µg/ml.

The harmonic mean elimination half life was 18.3 hours.

In Pigs:
In pigs intravenously administered florfenicol has a mean plasma clearance rate of 5.2 ml/min/kg and a mean volume of distribution at equilibrium of 948 ml/kg. The mean terminal half-life is 2.2 hours.
After initial intramuscular administration of florfenicol, maximum mean serum concentrations of between 3.8 and 13.6 µg/ml are reached after 1.4 hours and the concentrations deplete with a terminal mean half-life of 3.6 hours. After a second intramuscular administration, maximum serum concentrations of between 3.7 and 3.8 µg/ml are reached after 1.8 hours. Serum concentrations drop below 1 µg/ml, the MIC_{90} for the target porcine pathogens, 12 to 24 hours following IM administration. Florfenicol concentrations achieved in lung tissue reflect plasma concentrations, with a lung:plasma concentration ratio of approximately 1.

After administration to pigs by the intramuscular route, florfenicol is rapidly excreted primarily in urine. The florfenicol is rapidly metabolised.

6. PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Glycerol Formal
Pyrrolidone

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: 2 years
Shelf-life after first opening the immediate packaging: 28 days

6.4 Special precautions for storage

Protect from light. Keep container in the protective sleeve/outer carton.

6.5 Nature and composition of immediate packaging

50 ml, 100 ml, 250 ml and 500 ml clear type I glass vials and HDPE plastic vials with bromobutyl rubber bungs and aluminium seal.

50 ml clear type I glass vials as well as the 50 ml, 100ml, 250 ml and 500 ml HDPE plastic vials are presented in a cardboard box.

100 ml, 250 ml and 500 ml glass vials are accompanied by a protective sleeve.

Not all pack sizes may be marketed.

6.6 Special precautions for the disposal of unused veterinary medicinal product or waste material 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

Norbrook Laboratories Limited
Station Works
Camlough Road
Newry
Co. Down
BT35 6JP
Northern Ireland

8. MARKETING AUTHORISATION NUMBER

Vm 02000/4316

9. DATE OF FIRST AUTHORISATION

11 May 2012

10. DATE OF REVISION OF THE TEXT

May 2017

Approved: 04 May 2017