1. NAME OF THE VETERINARY MEDICINAL PRODUCT

NeoSol 500 000 IU/g powder for use in drinking water/milk for cattle, chickens, pigs, ducks, turkeys, geese, quail and partridges..

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each g contains

Active substance:
Neomycin (as Neomycin sulfate)…… 500 000 IU

Excipient:

Qualitative composition of excipients and other constituents
Lactose monohydrate

White to light yellow fine powder.

3. CLINICAL INFORMATION

3.1 Target species

Cattle (pre-ruminant), pigs (weaned and fattening pigs), chickens (including laying hens), ducks, turkeys (including turkey hens), geese, quail and partridges.

3.2 Indications for use for each target species

For treatment of gastrointestinal infections caused by *E. coli* susceptible to neomycin.

3.3 Contraindications

Do not use in cases of hypersensitivity to the active substance, to aminoglycosides or to any of the excipients.
Do not use in cases of intestinal obstruction.

3.4 Special warnings

Cross-resistance has been shown between neomycin and different aminoglycoside antibiotics in *Escherichia coli*. Use of the veterinary medicinal product/neomycin should be carefully considered when susceptibility testing has shown resistance to aminoglycoside antibiotics because its effectiveness may be reduced.

3.5 Special precautions for use

Special precautions for safe use in the target species:
Powder for oral solution that is to be dissolved in water and cannot be used as it is.
Special care should be taken when considering administration of the veterinary medicinal product to the newborn calf due to the known higher gastrointestinal absorption of neomycin in neonates. This higher absorption could lead to an increased risk of oto- and nephrotoxicity. The use of the veterinary

medicinal product in neonates should be based on the benefit-risk determination from the attending veterinarian.
Use of the veterinary medicinal product should be based on identification and susceptibility testing of the target pathogen(s). If this is not possible, therapy should be based on epidemiological information and knowledge of susceptibility of the target pathogens at farm level, or at local/regional level.
Use of the product should be in accordance with official, national and regional antimicrobial policies.
An antibiotic with a lower risk of antimicrobial resistance selection (lower AMEG category) should be used for first line treatment where susceptibility testing suggests the likely efficacy of this approach.
Co-selection for other classes of antimicrobials is common (see section 4.2 for further details).

Special precautions to be taken by the person administering the veterinary medicinal product to animals:
Aminoglycosides may cause hypersensitivity (allergy) following ingestion, inhalation, or skin contact.
People with known hypersensitivity to neomycin or other aminoglycosides should avoid contact with the veterinary medicinal product.
Aminoglycosides may be harmful following ingestion, eye or skin contact and inhalation.
Handle this veterinary medicinal product with great care to avoid dermal exposure, including hand to mouth contact. Avoid inhalation of dust.
Wear personal protective equipment consisting of appropriate protective clothes, gloves, glasses and disposable half-mask respirator conforming to European Standard EN149 or a non-disposable respirator to European Standard EN140 with a filter to EN143 when handling the veterinary medicinal product.
Wash hands after use.
In the event of eye or skin contact, rinse the affected area with large amounts of clean water.
In case of accidental ingestion, immediately rinse the mouth with water and seek medical advice.
If you develop symptoms following exposure such as a skin rash, you should seek medical advice immediately and show the package leaflet or the label to the physician.
Swelling of the face, lips or eyes or difficulty with breathing are more serious symptoms and require urgent medical attention.

Special precautions for the protection of the environment:
Not applicable.

3.6 Adverse events

Cattle (pre-ruminant), pigs (weaned and fattening pigs), chickens (including laying hens), ducks, turkeys (including turkey hens), geese, quail and partridges:
None known.

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 package leaflet for respective contact details.

3.7 Use during pregnancy, lactation or lay

The safety of the veterinary medicinal product has not been established during pregnancy, lactation or lay, in the target species.

Pregnancy, lactation and lay:
Laboratory studies in laboratory animals have not produced any evidence of teratogenic effects.
Use only according to the benefit-risk assessment by the responsible veterinarian.

3.8 Interaction with other medicinal products and other forms of interaction

General anaesthetics and muscle relaxing products increase the neuro-blocking effect of aminoglycosides. This may cause paralysis and apnoea.
Special care should be taken when using concurrently with diuretics and potentially oto- or nephrotoxic substances.

3.9 Administration routes and dosage

In drinking water/milk replacer use.
25 000 IU of neomycin per kg bodyweight per day for 3 to 4 consecutive days, corresponding to 50 mg of veterinary medicinal product per kg bodyweight per day (i.e. 5 g of veterinary medicinal product per 100 kg bodyweight per day), for 3 to 4 days.

To ensure a correct dosage body weight should be determined as accurately as possible.
The intake of medicated water or medicated milk replacer depends on the clinical condition of the animals. In order to obtain the correct dosage, the concentration of neomycin has to be adjusted accordingly.
The use of suitably calibrated measuring equipment is recommended.

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:

$$\frac{\text{mg veterinary medicinal product / kg bodyweight day} \times \text{average body weight (kg) of animals to be treated}}{\text{average daily water/milk replacer intake (L/animal)}} = \text{mg of veterinary medicinal product per litre of drinking water/milk replacer}$$

The maximum solubility of the veterinary medicinal product is 255 000 IU of neomycin/mL (510 g of veterinary medicinal product/L) of water.
The veterinary medicinal product should be incorporated in the milk replacer having a temperature between 21 and 30°C. To achieve the dissolution of the veterinary medicinal product in milk replacer, a vigorous stirring for 10 minutes should be applied.
For the administration of the veterinary medicinal product commercially available dosing pumps can be used.

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

Nephrotoxic and/or ototoxic effects may occur in case of accidental overdose.

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

Cattle (calves):
Meat and offal: 14 days.

Pigs (weaned piglets and pigs for fattening):
Meat and offal: 3 days.

Chickens, ducks, turkeys, geese, quail and partridge:
Meat and offal: 14 days.
Eggs: zero days.

4. PHARMACOLOGICAL INFORMATION

4.1 ATCvet code

QA07AA01

4.2 Pharmacodynamics

Neomycin is an antibiotic from the aminoglycoside family. Aminoglycosides have a broad antibacterial spectrum with good activity against Gram negative species, especially *Escherichia coli* and less activity against Gram positive species. This class of antimicrobials has no effect against anaerobic bacteria.
Neomycin binds to the 30S subunit of the bacterial ribosome which disturbs the reading of the constituent code of the RNA messenger, and finally the synthesis bacterial protein. At high concentrations, it has been shown that aminoglycosides damage the cell wall, conferring bactericidal and bacteriostatic properties.
Resistance mechanisms are complex and differ between aminoglycoside molecules and between bacterial species. The three main mechanisms of bacterial resistance to aminoglycosides are the reduction of the intracellular concentration of the antimicrobial, the enzymatic modification of the antibiotic and the modification of the molecular target. Enzymatic inactivation of aminoglycosides is the most common resistance mechanism.. Aminoglycosides are differently affected by these enzymes. Among those enzymes, AAC(6′)-Ib-cr gene confers resistance to gentamicin and fluoroquinolones. These resistance mechanisms can be located in mobile genetics elements increasing the likelihood of spread of genes conferring resistance to different aminoglycosides (cross-resistance) and also to other classes of antimicrobials (co-resistance).
A significant proportion of resistance to neomycin in pathogenic *E. coli* is observed mainly in calves but is variable across EU countries.

4.3 Pharmacokinetics

Neomycin is poorly absorbed from the gastrointestinal tract. Absorption from the gastrointestinal tract can be significant in neonates. 90% of neomycin is excreted in the faeces after oral administration.

Environmental properties
The active ingredient neomycin sulfate is persistent in the environment.

5. PHARMACEUTICAL PARTICULARS

5.1 Major incompatibilities

This veterinary medicinal product may be administered using drinking water containing hydrogen peroxide at a maximum concentration of 35 ppm.
This veterinary medicinal product must not be administered using hard water containing chlorine.
This veterinary medicinal product may be administered using soft water containing chlorine at a maximum concentration of 1 ppm.
In the absence of compatibility studies, this veterinary medicinal product must not be mixed with other veterinary medicinal products.

5.2 Shelf life

Shelf life of the veterinary medicinal product as packaged for sale: 2 years.
Shelf life after first opening the immediate packaging: 6 months.
Shelf life after dissolution in drinking water according to directions: 24 hours
Shelf life after dissolution in milk replacer: 2 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

100 g sachet made of LDPE/acrylic polymer/aluminium/LDPE/paper closed by thermal system.
Zipped 1 kg bag made of LDPE/aluminium/polyester closed by thermal system.

Not all pack sizes may be marketed

5.5 Special precautions for the disposal of unused veterinary medicinal products 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 AUTHORISATION HOLDER

HUVEPHARMA NV

7. MARKETING AUTHORISATION NUMBER(S)

VPA10782/048/001

8. DATE OF FIRST AUTHORISATION

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

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).