NOAH Compendium

MSD Animal Health UK Limited

Telephone:01908 685685 (Customer Support Centre)

Website:www.msd-animal-health.co.uk

Email:vet-support.uk@msd.com

Cepravin® Dry Cow 250mg Intramammary suspension

Species: Cattle

Therapeutic indication:Pharmaceuticals: Antimicrobials: Intramammaries: Dry cow

Active ingredient: Cephalonium

Product: Cepravin® Dry Cow 250mg Intramammary suspension

Product index: Cepravin® Dry Cow

Cattle - milk:96 hours (if calving ≥ 54 days after treatment), 54 days + 96 hours (if calving is ≤ 54 days after treatment)

Cattle - meat:21 days

Incorporating:

Qualitative and quantitative composition

Active Constituent: per syringe

Cefalonium 0.250 g

(as cefalonium dihydrate)

For the full list of excipients, see section “Pharmaceutical particulars”.

Pharmaceutical form

Intramammary suspension.

Clinical particulars

Target Species

Cattle.

Indications for use

Recommended for routine dry cow therapy to treat existing sub-clinical infections and to prevent new infections which occur during the dry period.

Contraindications

Not for use in the lactating cow.

Not intended for use within 54 days of calving.

Special warnings for each target species

No special warnings are considered necessary.

Special precautions for use

Use of the product should be based on susceptibility testing of the bacteria isolated from milk samples 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.

Use of the product deviating from the instructions given in the SPC may increase the prevalence of bacteria resistant to cefalonium and may decrease the effectiveness of treatment with other beta lactams.

Dry cow therapy protocols should take local and national policies on antimicrobial use into consideration, and undergo regular veterinary review.

The feeding to calves of milk containing residues of cefalonium that could select for antimicrobial-resistant bacteria (e.g. production of beta-lactamases) should be avoided up to the end of the milk withdrawal period, except during the colostral phase.

The efficacy of the product has only been established against pathogens sensitive to the active substance. Consequently, serious acute mastitis (potentially fatal) due to other pathogen species, particularly *Pseudomonas aeruginosa*, can occur after drying off. Good hygiene practices should be thoroughly respected in order to reduce this risk.

Do not bend the nozzle.

Do not contaminate the nozzle

If calving occurs before 54 days after treatment, the absence of antibiotic should be confirmed by testing before the milk is used for human consumption. Milk for human consumption may be taken after 54 days plus 96 hours after treatment.

In cows suffering from hypocalcaemia it may be necessary to discard milk for a longer period.

If the product is used in heifers during their first pregnancy the same precautions should be observed as in cows, i.e. infusions should be given not less than 54 days before calving and milk discarded for the statutory four days after calving.

Summer Mastitis - It is unlikely that antibiotic treatment alone will control Summer Mastitis and therefore other measures should be implemented as part of routine management. These measures include:

- Practising some form of fly control on the farm.

- Avoiding pasturing cattle on wet or wooded fields which are known to be associated with Summer Mastitis.

- Post-infusion teat dipping of cows and heifers receiving prophylactic intramammary infusions for the disease.

- Prompt attention to teat injuries or sores as these rapidly attract flies.

- Farms with an intractable problem should consider changing the calving pattern to avoid having animals at risk during the summer months.

Operator warnings

Penicillin and cefalosporins may cause sensitisation (allergy) following injection, inhalation, ingestion or skin contact. Sensitivity to penicillin may lead to cross-sensitivity to cefalosporin and vice versa. Allergic reactions to these substances may occasionally be serious.

Do not handle this product if you know you are sensitised, or if you have been advised not to work with such preparations.

Handle this product with great care to avoid exposure, taking all recommended precautions.

If you develop symptoms following exposure such as a skin rash you should seek medical advice and show the Doctor this warning. Swelling of the face, lips or eyes or difficulty breathing are more serious symptoms and require urgent medical attention.

Wash hands after use.

Adverse Reactions

None known

Use during pregnancy or lactation

Intended for use during the last trimester of pregnancy once the lactating cow has been dried off. There is no adverse treatment effect on the foetus.

Not to be used in cows that are lactating.

Interactions

There are no known interactions.

Amounts to be administered and administration route

For intramammary infusion.

The contents of one syringe should be infused into the teat canal of each quarter immediately after the last milking of the lactation. Before infusion, the teat should be thoroughly cleaned and disinfected. Avoid contamination of the nozzle after removing the cap. After infusion it is advisable to dip the teats in an antiseptic preparation specifically designed for this purpose.

After milking is complete thoroughly clean and disinfect the end of the teat with the cleaning towel provided.

Option 1: For short nozzle intramammary administration hold the barrel of the syringe and the base of the cap in one hand and twist off the small upper part of the cap above the indent mark (the base portion of the cap remains on the syringe). Take care not to contaminate the short exposed part of the nozzle.

Option 2: For full nozzle intramammary administration remove the cap fully by holding the barrel of the syringe firmly in one hand and with the thumb and push up and along the length of the cap until the cap clicks off. Take care not to contaminate the nozzle.

Insert the nozzle into the teat canal and apply steady pressure on the syringe plunger until the full dose has been delivered. Holding the end of the teat with one hand, gently massage upwards with the other to aid dispersion of the antibiotic into the quarter.

Finally immerse the teats in a teat dip.

Overdose

Repeated doses in cattle on three consecutive days did not demonstrate or produce any adverse effects.

Withdrawal periods

Milk for human consumption may only be taken 96 hours after calving.

If calving occurs before 54 days after treatment, milk for human consumption may be taken after 54 days plus 96 hours after treatment, ensuring that the milk from at least 7 complete milking is discarded.

The absence of antibiotic should be confirmed by testing before its milk is used for human consumption. This is advisable because of variation in the milking cows ability to excrete antibiotic from dry cow products. In cows suffering from hypocalcaemia, it may be necessary to discard milk for a longer period.

Animals for human consumption should not be slaughtered until 21 days after last treatment.

Pharmacological particulars

ATC Vet Code: QJ51DB90

Pharmacotherapeutic group

Cepravin Dry Cow is a long-acting intramammary cerate containing cefalonium dihydrate, a semi-synthetic cefalosporin antibiotic. It is formulated to give persistent antibiotic levels in the dry udder.

Pharmacodynamics

The cefalosporins are a family of drugs which are similar in chemical structure to the penicillins. The major difference being that penicillins are based on a β-lactam ring fused with a dihydrothiazine ring and cephalosporins on a β-lactam ring fused with a thiazolidone ring. The two families of antibiotics are collectively known as β-lactams.

Both cefalosporins and penicillins kill susceptible bacteria and the mode of action of the individual antibiotics of both families is the same.

The cell wall of bacteria is essential for their normal growth and development. Peptidoglycan is a heteropolymeric component of the cell wall which gives it rigidity. Peptidoglycan consists of glycan chains which are linear strands of two alternating amino sugars (N-acetylglucosamine and N-acetylmuramic acid) that are linked by peptide chains. Cefalonium and other β-lactams act by inhibiting the enzyme transpeptidase, usually following interaction with penicillin binding protein (PBP), which is responsible for the final stage of peptidoglycan synthesis. This inhibition of cell wall synthesis produces unstable forms of the bacterium during reproduction and these unstable forms lyse.

Therefore, these antibiotics are bactericidal in their mode of action.

β-Lactam antibiotics cannot kill or even inhibit all bacteria as there are various methods by which bacteria become resistant. These mechanisms include non-susceptible PBPs, failure of the antibiotic to penetrate to the site of action and production of β-lactamase enzymes. These enzymes hydrolyse the β-lactam ring producing an inactive derivative. Cefalosporins in general are not susceptible to the actions of β-lactamase enzymes, especially when compared with penicllin, ampicillin or amoxicillin.

The penicillins and cefalosporins have a high therapeutic index in both animals and man. The reason for this probably relates to their highly specific mode of action in attacking the bacterial cell wall. As mammalian cells do not have an outer cell wall like that found in bacteria the β-lactams are without effect on mammalian cell division. The most common adverse effect of the cefalosporins is a hypersensitivity reaction which in most cases manifests as maculopapular skin rashes after several days of therapy. They may be accompanied by eosinophilia and fever. Anaphylactic reactions are rare with the cephalosporins. There are no data available specifically on the effects of cephalonium in man.

Cefalonium is a broad spectrum cefalosporin antibiotic which has bactericidal activity against the majority of organisms associated with bovine mastitis. The antibacterial activity is not impaired in the presence of milk.

Cefalonium is active against non-β-lactamase and β-lactamase producing organisms:

Actinomyces pyogenes Citrobacter spp.

Corynebacterium ulcerans Enterobacter spp.

Escherichia coli Klebsiella spp.

Proteus spp. *Staphylococcus aureus*

Penicillin resistant strains of *Staphylococcus aureus*

Streptococcus agalactiae Streptococcus dysgalactiae

Streptococcus uberis

Effective levels of cefalonium are maintained in most quarters for up 10 weeks after infusion of Cepravin Dry Cow. Cattle treated with Cepravin Dry Cow have a lower incidence of *Streptococcus uberis* infection during the dry period and the immediate post-calving period, with accompanying lower somatic cell counts.

Pharmacokinetics

The serum pharmacokinetics of cefalonium have not been investigated in definitive studies so the serum half-life is not known. Some work in dogs has shown that the drug is absorbed following oral administration.

Pharmacokinetics of cefalonium in the target species has only been investigated following intramammary administration. Studies were originally conducted using Cepravin Dry Cow containing non-radiolabelled cefalonium. The presence of cefalonium and/or its biologically active metabolites was detected in urine or serum using a microbiological assay.

These original studies have been supplemented by a new study using C-14 radiolabelled cefalonium incorporated into the Cepravin Dry Cow formulation. In this study the serum, urine, faeces, tissue and milk were examined for the presence of radiochemical content. The results showed that cefalonium was extensively but slowly absorbed from the udder and excreted primarily in the urine. Between 7 and 13% of the radioactivity was eliminated in urine on each of the first three days post dosing whilst daily excretion in faeces was < 1% over the same period.

Mean blood concentration of radioactivity remained fairly constant during approximately 10 days after dosing which is consistent with slow but prolonged absorption of cefalonium from the udder. Plasma levels of radioactivity were generally higher than those found in blood indicating limited uptake of cefalonium and its metabolites into blood cells.

The results of the earlier work support the conclusion of the radiolabelled work. In these 2 studies Cepravin Dry Cow was given as a single infusion to 4 and 2 cows respectively. In one of the studies 2 additional cows were given repeated infusions of the formulation for 3 days. Antibiotic activity was detected in urine at concentrations which indicated rapid and significant absorption from the udder. Absorption and elimination of cefalonium and its metabolites was however more rapid in the older studies.

There are no data on the pharmacokinetics of cefalonium in humans. However, cefalonium is structurally related to cefaloridine, differing only by the presence of a carbamoyl moiety at the para-

position of the pyridine ring. Cefaloridine is used in man and administered by the parenteral route. The half-life is about 1-1.5 hours and only about 20% is bound to plasma proteins. It is reported to be poorly absorbed after oral administration. Given the similarity in structures, cefalonium probably has similar properties.

Many cefalosporins are eliminated unchanged in urine by humans and laboratory animals. It is therefore very likely that most of the radioactivity in urine at early time points will be present as unchanged cefalonium. Results from the new study in cows show however that this is not the situation with milk. For the early milkings post calving the concentration of cefalonium in milk accounts for only a small proportion of the total radioactive residue. This indicates that any metabolism/degradation takes place within the udder. However, in addition to analysis for cefalonium concentrations milk samples were also analysed for microbiological residues using a validated method. It was determined that the metabolites/degradation products had no antibiotic activity.

Pharmaceutical particulars

Excipients

Aluminium Distearate

Liquid Paraffin

Major incompatibilities

There are no known incompatibilities.

Shelf life

3 Years

Special precautions for storage

Do not store above 30 °C.

Immediate packaging

Single dose 3g white polyethylene syringes with a red polyethylene dual push-fit cap.

Boxes of 20 syringes and cleaning towels; ‘Herd Pack’ of 200 syringes (10 boxes of 20 syringes and cleaning towels)

Not all pack sizes may be marketed.

Disposal

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

Marketing Authorisation Holder (if different from distributor)

NOAH Compendium

Intervet International B.V., represented by MSD Animal Health UK Limited.

Marketing Authorisation Number

UK: Vm 06376/4128

Significant changes

Date of the first authorisation or date of renewal

01/01/2003.

Date of revision of the text

January 2025.

Any other information

For animal treatment only. Keep out of the sight and reach of children.

Legal category

Legal category:POM-V

GTIN

GTIN description: Cepravin DC 10x20syr:

GTIN:5017363001778