SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE VETERINARY MEDICINAL PRODUCT
READYCEF 50 mg/ml suspension for injection for swine and cattle

2. QUALITATIVE AND QUANTITATIVE COMPOSITION
Each ml contains:
Active substance
Ceftiofur (as ceftiofur hydrochloride).....50 mg

For the full list of excipients, see section 6.1

3. PHARMACEUTICAL FORM
Suspension for injection.
White to white-cream coloured oily suspension.

4. CLINICAL PARTICULARS
4.1 Target species
Swine and cattle.

4.2 Indications for use, specifying the target species
Swine:
- Treatment of bacterial respiratory disease associated with *Pasteurella multocida*, *Actinobacillus pleuropneumoniae* and *Streptococcus suis* sensitive to ceftiofur hydrochloride.

Cattle:
- For the treatment of bacterial respiratory disease associated with *Mannheimia haemolytica* (formerly *Pasteurella haemolytica), Pasteurella multocida* and *Histophilus somni* (former *Haemophilus somnus)* sensitive to ceftiofur hydrochloride.

- For the treatment of acute interdigital necrobacillosis (panaritium, foot rot), associated with *Fusobacterium necrophorum* and *Bacteroides melaninogenicus* (*Porphyromonas asaccharolytica*) sensitive to ceftiofur hydrochloride.

- For the treatment of the bacterial component of acute post-partum (puerperal) metritis within 10 days after calving associated with *Escherichia coli*, *Arcanobacterium pyogenes* and *Fusobacterium necrophorum* sensitive to ceftiofur hydrochloride. The indication is restricted to cases where treatment with another antimicrobial has failed.

4.3 Contraindications
Do not administer to an animal previously found to be hypersensitive to ceftiofur and other ß-lactam antibiotics or to any of the excipients.
Do not use in case of known resistance to the active substance or to other beta-lactam antibiotics.
Do not inject intravenously.
Do not use in poultry (including eggs) due to risk of spread of antimicrobial resistance to humans.

4.4 Special warnings for each target species
None known.

4.5 Special precautions for use

Special precautions for use in animals

The product selects for resistant strains such as bacteria carrying extended spectrum betalactamases (ESBL) and may constitute a risk to human health if these strains disseminate to humans e.g. via food. For this reason, the product should be reserved for the treatment of clinical conditions which have responded poorly, or are expected to respond poorly (refers to very acute cases when treatment must be initiated without bacteriological diagnosis) to first line treatment. Official, national and regional antimicrobial policies should be taken into account when the product is used. Increased use, including use of the product deviating from the instructions given in the SPC, may increase the prevalence of such resistance. Whenever possible, the product should only be used based on susceptibility testing.
The product is intended for treatment of individual animals. Do not use for disease prevention or as a part of heard health programmes. Treatment of groups of animals should be strictly restricted to ongoing disease outbreaks according to the approved conditions of use.
Do not use as prophylaxis in case of retained placenta.

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

Penicillins and cephalosporins may cause hypersensitivity (allergy) following injection, inhalation, ingestion or skin contact. Hypersensitivity to penicillins may lead to cross reactions to cephalosporins and vice versa. Allergic reactions to these substances may occasionally be serious.

In case of hypersensitivity or if you have been warned not to use these products any contact with the product should be avoided.
Take care to avoid accidental self injection.
In the case of self-injection or following exposure and development of symptoms such as skin rash, seek medical advice immediately and show the package leaflet to the physician.

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)

In swine, mild reactions at the injection site, such as discoloration of the fascia or fat, have been observed in some animals for up to 20 days after injection.

In cattle, mild inflammatory reactions at the injection site, such as tissue oedema and discoloration of the subcutaneous tissue and/or fascial surface of the muscle may be observed. Clinical resolution is reached in most animals by 10 days after injection although slight tissue discoloration may persist for 28 days or more.
Hypersensitivity reactions unrelated to dose can occur. Allergic reactions (e.g. skin reactions, anaphylaxis) may occasionally occur.
In case of the occurrence of allergic reaction the treatment should be withdrawn.

4.7 Use during pregnancy and lactation

Studies in laboratory species have not produced any evidence of teratogenic, foetotoxic or maternotoxic effects or of abortion. Safety has not been established in the target species during pregnancy. Use only according to the benefit/risk assessment by the responsible veterinarian.

4.8 Interaction with other medicinal products and other forms of interaction
The bactericidal properties of β-lactams are neutralised by simultaneous use of bacteriostatic antibiotics (macrolides, sulphonamides and tetracyclines)..

4.9 Amounts to be administered and administration route
Swine:
3 mg ceftiofur /kg bw/day for 3 days by intramuscular injection, i.e. 1 ml of the veterinary medicinal product /16 kg bw / day.

Cattle:
Treatment of respiratory disease: 1 mg ceftiofur /kg bw/day for 3 to 5 days by subcutaneous injection, i.e. 1 ml of the veterinary medicinal product /50 kg bw / day.
Treatment of acute interdigital necrobacillosis: 1 mg ceftiofur /kg bw/day for 3 days by subcutaneous injection, i.e. 1 ml of the veterinary medicinal product /50 kg bw / day.
Acute post-partum metritis within 10 days after calving: 1 mg ceftiofur / kg bw / day for 5 consecutive days by subcutaneous injection, i.e. 1 ml of the veterinary medicinal product / 50 kg bw/ day.

Subsequent injections must be given at different sites.
In case of acute post-partum metritis, additional supportive therapy might be required in some cases.

Before use shake the bottle for a minute or until the product appears adequately resuspended.
To ensure a correct dosage body weight should be determined as accurately as possible to avoid underdosing.
100 ml vials can only be broached a maximum of 20 times. 250 ml vials can only be broached a maximum of 50 times.

4.10 Overdose (symptoms,emergency procedures,antidotes), if necessary
The low toxicity of ceftiofur has been demonstrated in swine using ceftiofur sodium at doses in excess of 8 times the recommended daily dose of ceftiofur intramuscularly administered for 15 consecutive days.
In cattle, no signs of systemic toxicity have been observed following substantial parenteral overdosages.

4.11 Withdrawal periods
Swine: Meat and offal: 5 days.
Cattle: Meat and offal: 8 days.
Milk: zero days.

5. PHARMACOLOGICAL PROPERTIES
Pharmacotherapeutic group: Antibacterials for systemic use, Third-generation cephalosporins.
ATCvet code: QJ01DD90

5.1 Pharmacodynamic properties
Ceftiofur is a third generation cephalosporin, which is active against many Gram-positive and Gram-negative bacteria, including Beta-lactamases producing strains.

Ceftiofur acts by inhibiting the bacterial cell wall synthesis, thereby exerting bactericidal properties. Cell wall synthesis is dependent on enzymes that are called penicillin-binding proteins (PBP's). Bacteria develop resistance to cephalosporins by four basic mechanisms: 1) altering or acquiring penicillin binding proteins insensitive to an otherwise effective b -lactam; 2) altering the permeability of the cell to b -lactams; 3) producing b -lactamases that cleave the b -lactam ring of the molecule, or 4) active efflux. Some b -lactamases, documented in Gram-negative enteric organisms, may confer elevated MICs to varying degrees to third and fourth generation cephalosporins, as well as penicillins, ampicillins, b -lactam inhibitor combinations, and first and second generation cephalosporins

Ceftiofur is active against the following microorganisms which are involved in respiratory diseases in swine: *Pasteurella multocida*, *Actinobacillus pleuropneumoniae* and *Streptococcus suis*. *Bordetella bronchiseptica* is intrinsically non-susceptible to ceftiofur.

It is also active against bacteria involved in respiratory disease in cattle: *Pasteurella multocida*, *Mannheimia haemolytica*, *Histophilus somni (formerly Haemophilus somnus) ;* bacteria involved in acute bovine foot rot (interdigital necrobacillosis): *Fusobacterium necrophorum*, *Bacteroides melaninogenicus* (*Porphyromonas asaccharolytica*); and bacteria associated with acute post-partum (puerperal) metritis in cattle: *Escherichia coli*, *Arcanobacterium pyogenes* and *Fusobacterium necrophorum*.

5.2 Pharmacokinetic properties
After administration, ceftiofur is quickly metabolised to desfuroylceftiofur, the principal active metabolite.
Desfuroylceftiofur has an equivalent anti-microbial activity to ceftiofur against the bacteria involved in respiratory disease in animals.

In pigs given a single intramuscular product dose of 3 mg Ceftiofur /kg body weight (bw), maximum plasma concentrations of 12.2 µg/mL were reached after 1hour; the terminal elimination ($t_{½}$) of desfuroylceftiofur was 19.8 hours.

The elimination occurred mainly via the urine (more than 70 %). Average recoveries in faeces accounted for approximately 12-15 % of the drug.

Ceftiofur is completely bioavailable following intramuscular administration.

After a single subcutaneously product dose of 1 mg Ceftiofur /kg given to cattle, maximum plasma levels of 2.80 µg/mL were reached within 3 hours after the administration. The terminal elimination ($t_{½}$) of desfuroylceftiofur in cattle is 10.3 hours.
The elimination occurred mainly via the urine (more than 55 %); 31 % of the dose was recovered in the faeces.

Ceftiofur is completely bioavailable following subcutaneous administration

6. PHARMACEUTICAL PARTICULARS

6.1. List of excipients
Hydrogenated soybean lecithin
Sorbitan oleate
Cottonseed oil

6.2 Incompatibilities
In the absence of compatibility studies, this 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 broaching of the container: 28 days.

6.4 Special precautions for storage
Do not store above 25º C.
Do not refrigerate or freeze
Keep the vial in the outer carton in order to protect from light

6.5 Nature and composition of immediate packaging
Clear glass vial type I of 100 ml with a bromobuthyl rubber stopper and aluminium cap with opening ring FLIPP OFF of blue colour. One vial of 100ml is available in a cardboard box.
Clear glass vial type I of 250 ml with a bromobuthyl pink rubber stopper and aluminium cap gold colour. One vial of 250ml is available in a cardboard box.
Not all pack sizes may be marketed.

6.6 Special precautions for the disposal of unused veterinary medicinal product or waste material if any
Any unused veterinary medicinal products or waste material derived from such veterinary medicinal product should be disposed of in accordance with local requirements.

7. MARKETING AUTHORISATION HOLDER

Laboratorios Calier, S.A.
C/ Barcelonès, 26 (Pla del Ramassar)
08520 Les Franqueses del Vallès, (Barcelona)
Spain

8. MARKETING AUTHORISATION NUMBER

Vm 20634/4003

9. DATE OF THE FIRST AUTHORISATION

07 April 2010

10. DATE OF REVISION OF TEXT

January 2016

PROHIBITION OF SALE, SUPPLY AND/OR USE

Under veterinary prescription

 14 January 2016