# The new meloxicam range for cattle, pigs & horses

Melovem® 5 mg/ml
Melovem® 20 mg/ml
Melovem® 30 mg/ml

DOPHARMA
VETERINAIRE FARMACA

# The new Melovem® range

## + Many indications for cattle, horses and pigs
## + Accurate dosing

Dopharma has obtained an EU-marketing authorisation for two new products:

+ **Melovem® 20 mg/ml**
+ **Melovem® 30 mg/ml**

Together with the already successful **Melovem® 5 mg/ml**, Dopharma now offers a unique meloxicam range.

With **Melovem® 5 mg/ml** it is possible to accurately treat animals with a low bodyweight. The higher concentrations however are very suitable for the treatment of larger animals, without the need to inject large volumes. **Melovem® 20 mg/ml** is authorised for cattle, pigs as well as horses and is licensed for intravenous administration. **Melovem® 30 mg/ml** is a unique registration in the EU: a high concentrated meloxicam injection indicated for cattle as well as pigs.

| Animal Species | | Melovem® 5 mg/ml EU/2/09/098/001 | Melovem® 20 mg/ml EU/2/09/098/002-004 | Melovem® 30 mg/ml EU/2/09/098/005-007 |
|---|---|---|---|---|
|  Cattle | Indications* | adjunctive therapy in<br>• respiratory infections<br>• diarrhoea<br>• pain relief after dehorning | adjunctive therapy in<br>• respiratory infections<br>• diarrhoea<br>• pain relief after dehorning<br>• acute mastitis | adjunctive therapy in<br>• respiratory infections<br>• diarrhoea<br>• pain relief after dehorning<br>• acute mastitis |
| | Dosage | 1 ml / 10 kg BW | 1 ml / 40 kg BW | 1 ml / 60 kg BW |
| | Administration | s.c. | s.c. / i.v. | s.c. |
| | WT meat and offal | 15 days | 15 days | 15 days |
| | WT milk | - | 5 days | 5 days |
|  Horses | Indications* | | • musculo-skeletal disorders<br>• colic | |
| | Dosage | | 1 ml / 33 kg BW | |
| | Administration | | i.v. | |
| | WT meat and offal | | 5 days | |
|  Pigs | Indications* | • non-infective locomotor diseases<br>• pain relief associated with castration | • non-infective locomotor diseases<br>• adjunctive therapy in MMA | • non-infective locomotor diseases<br>• adjunctive therapy in MMA |
| | Dosage | 1 ml / 12.5 kg BW | 1 ml / 50 kg BW | 1 ml / 75 kg BW |
| | Administration | i.m. | i.m. | i.m. |
| | WT meat and offal | 5 days | 5 days | 5 days |

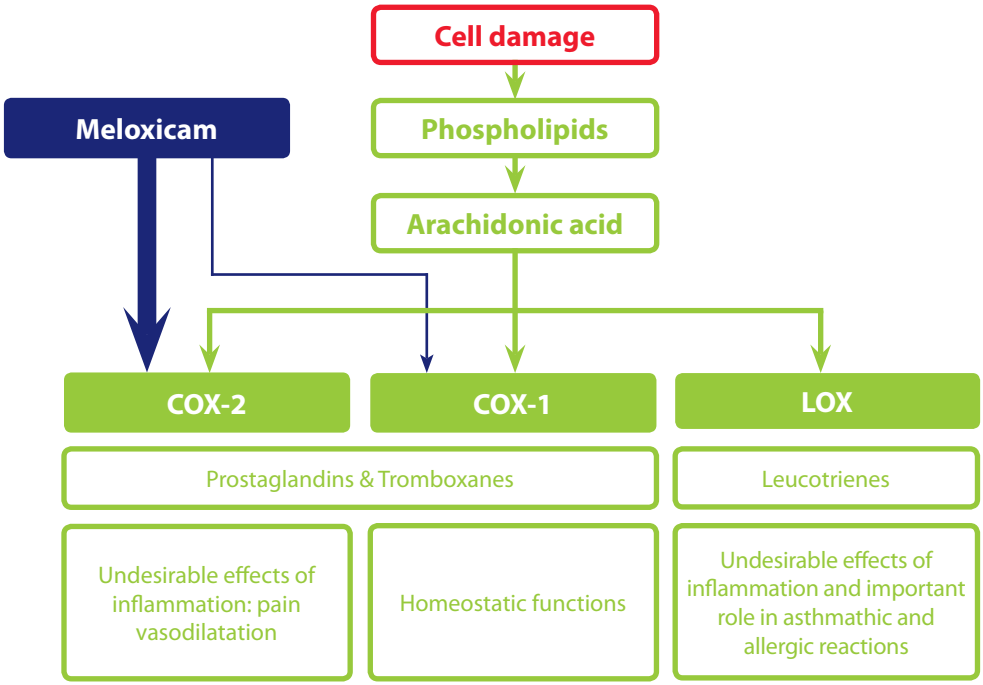
* See SPC for details

# Inflammation

## The body's response to cell injury

Inflammation is the body's response to cell injury caused by stimuli of various origin e.g. trauma, infection or irritants. When a cell membrane becomes damaged phospholipids are released starting the arachidonic acid cascade. As a result prostaglandins, thromboxanes and leucotrienes are formed in inflamed tissues.

Two isoforms of the enzyme cyclooxygenase, COX-1 and COX-2, are responsible for the production of prostaglandins and thromboxanes. The enzyme lipoxygenase is responsible for the production of leucotrienes.




### COX-1

COX-1 is a constitutive form of cyclooxygenase or a so called housekeeping enzyme and has a mainly homeostatic function. It is responsible for the production of cytoprotective prostaglandins and has an important role in the protection of the gastric mucosa. Furthermore COX-1 has an important role in controlling renal blood flow and platelet aggregation.

### COX-2

COX-2 is an inducible form of cyclooxygenase and is mainly responsible for the elevated level of prostaglandins in inflamed tissues. These pro-inflammatory prostaglandins are largely responsible for the undesirable effects of the inflammatory reaction such as pain and fever.

### NSAIDs

Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) inhibit the cyclooxygenase enzymes. Toxicity of NSAIDs is predominately related to COX-1 inhibition.

# Meloxicam

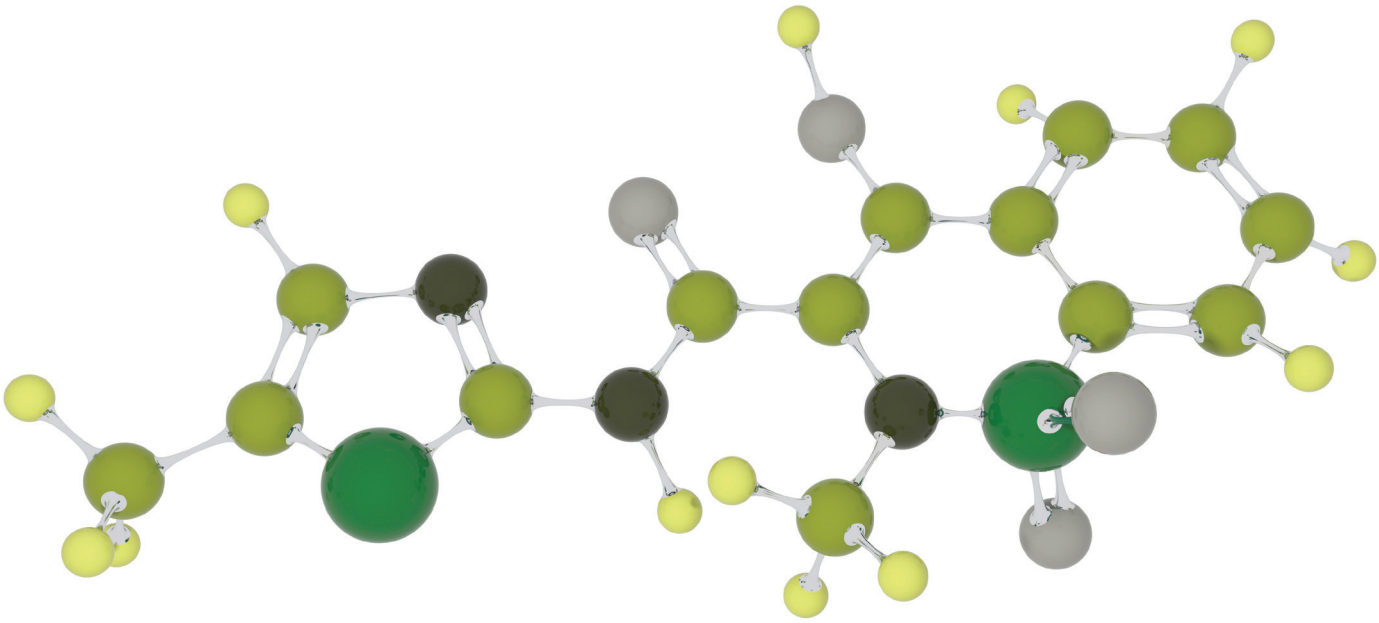
## One of the most widely used NSAIDs in animals

+ **Long acting**
+ **Potent anti-inflammatory drug[1]**
+ **Preferential COX-2 inhibitor; low ulcerogenic potential[1]**
+ **Analgetic effect**
+ **Antipyretic effect**
+ **Anti-endotoxic effect**
+ **Administration is tolerated well[2,3]**
+ **Better animal welfare**

Meloxicam is a COX-2 preferential NSAID of the oxicam class. This means that meloxicam mainly inhibits COX-2 thereby exerting anti-inflammatory, anti-exudative, analgetic, and antipyretic effects.[2,4]

Administered in the registered dose, meloxicam has only a minor effect on COX-1.

Its marked anti-endotoxic activity has also been shown: meloxicam inhibits the production of thromboxane B2, induced by intravenous administered *E. coli* endotoxin in calves and pigs and the intramammary administration of *E. coli* endotoxin in lactating cows.[5,6,7]



# Meloxicam

## Pharmacokinetic properties

**+ Long plasma half-life; long acting**
**+ Good bioavailability**

After intramuscular or subcutaneous administration, meloxicam is usually well absorbed.[8] Species differences occur. In general, the volume of distribution is low for NSAIDs in most species. This is probably caused by the extreme binding to plasma proteins (more than 98%); meloxicam is no exception to this phenomenon.

### Duration of action

The therapeutic effect of NSAIDs exceeds the elimination half-life. NSAIDs penetrate readily into inflamed tissue because of increased vascular permeability. Furthermore as a result of an acidic environment in inflamed tissue, NSAIDs are slowly cleared from inflammatory exudate ("ion trapping"). In cattle it has been shown that a single subcutaneous dose of meloxicam was clinically effective for 3 days.[9]

Despite the difference between duration of action and elimination half-life, the half-life can be used to compare different NSAIDs.

| Animal Species | Elimination half-life | | |
|---|---|---|---|
| | Meloxicam | Flunixine | Ketoprofen |
| Cattle | 26 h* (sc)<br>17.5 h* (im) | 4 h (iv) | 2,5 h (im) |
| Pig | 2.5 h (im) | 5 h (im) | 2 h (im) |
| Horse | 8.5 h (iv) | 2 h (iv) | 1 h (iv) |

* Elimination half-life in cattle for young stock and dairy cattle respectively.

# Melovem®

## Melovem® 5 mg/ml

Composition: meloxicam 5 mg/ml, benzyl alcohol 50 mg/ml Target species Cattle (calves and young cattle) and pigs. Indications for use, specifying the target species Cattle: For use in acute respiratory infection with appropriate antibiotic therapy to reduce clinical signs in cattle. For use in diarrhoea in combination with oral re-hydration therapy to reduce clinical signs in calves of over one week of age and young, non-lactating cattle. For the relief of post-operative pain following dehorning in calves. Pigs: For use in non-infectious locomotor disorders to reduce the symptoms of lameness and inflammation. For the relief of post operative pain associated with minor soft tissue surgery such as castration. Contraindications Do not use in animals suffering from impaired hepatic, cardiac or renal function and haemorrhagic disorders, or where there is evidence of ulcerogenic gastrointestinal lesions. Do not use in case of hypersensitivity to the active substance or to any of the excipients. For the treatment of diarrhoea in cattle, do not use in animals of less than one week of age. Do not use in pigs less than 2 days old. Special warnings Treatment of piglets with Melovem before castration reduces post operative pain. To obtain pain relief during surgery co-medication with an appropriate anaesthetic/sedative is needed. To obtain the best possible pain relieving effect post surgery Melovem should be administered 30 minutes before surgical intervention. Special precautions for use in animals If adverse reactions occur, treatment should be discontinued and the advice of a veterinarian should be sought. Avoid use in very severely dehydrated, hypovolaemic or hypotensive animals which require parenteral rehydration, as there may be a potential risk of renal toxicity. Special precautions to be taken by the person administering the veterinary medicinal product to animals Accidental self-injection may give rise to pain. People with known hypersensitivity to NSAID should avoid contact with the veterinary medicinal product. In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician. Adverse reactions (frequency and seriousness) Transient swelling at the injection site was commonly reported in clinical studies following subcutaneous administration in cattle. Injection site swelling may be painful. Transient swelling at the injection site was observed in clinical studies following intramuscular administration in pigs. In very rare cases, anaphylactoid reactions may occur and should be treated symptomatically. Use during pregnancy or lactation Cattle: Can be used during pregnancy. For lactating animals see section 4.11 of the SPC. Pigs: Can be used during pregnancy and lactation. Interaction with other medicinal products and other forms of interaction Do not administer concurrently with glucocorticosteroids, other non-steroidal anti-inflammatory drugs or with anti-coagulant agents. Amounts to be administered and administration route Cattle: Single subcutaneous injection at a dosage of 0.5 mg meloxicam/kg body weight (i.e. 10.0 ml/100 kg body weight) in combination with antibiotic therapy or with oral re-hydration therapy, as appropriate. Pigs: Locomotor disorders: Single intramuscular injection at a dosage of 0.4 mg meloxicam/kg body weight (i.e. 2.0 ml/25 kg body weight). If required, a second administration of meloxicam can be given after 24 hours. It is recommended to administer the second injection at a different site since local tolerance has been assessed after single injection only. Reduction of post-operative pain: Single intramuscular injection at a dosage of 0.4 mg meloxicam/kg body weight (i.e. 0.4 ml/5 kg body weight) before surgery. Particular care should be taken with regard to the accuracy of dosing including the use of an appropriate dosing device and careful estimation of body weight. Avoid introduction of contamination during use. Overdose In the event of an overdose symptomatic treatment should be initiated. Withdrawal periods Cattle: Meat and offal: 15 days. Not permitted for use in lactating animals producing milk for human consumption. Pigs: Meat and offal: 5 days. Incompatibilities In the absence of compatibility studies, this veterinary medicinal product must not be mixed with other veterinary medicinal products. 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. Special precautions for storage Keep injection vial in the outer carton in order to protect from light.This veterinary medicinal product does not require any special temperature storage conditions. 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. Marketing authorisation number: EU/2/09/098/001 Marketing authorisation holder Dopharma Research B.V., Zalmweg 24, 4941 VX , Raamsdonksveer, The Netherlands

## Melovem® 20 mg/ml

Composition: meloxicam 20 mg/ml, ethanol 150 mg/ml Target species Cattle, pigs and horses. Indications for use, specifying the target species Cattle: For use in acute respiratory infection with appropriate antibiotic therapy to reduce clinical signs in cattle. For use in diarrhoea in combination with oral re-hydration therapy to reduce clinical signs in calves of over one week of age and young, non-lactating cattle. For adjunctive therapy in the treatment of acute mastitis, in combination with antibiotic therapy. For the relief of post-operative pain following dehorning in calves. Pigs: For use in non-infectious locomotor disorders to reduce the symptoms of lameness and inflammation. For adjunctive therapy in the treatment of puerperal septicaemia and toxaemia (mastitis-metritis-agalactia syndrome) with appropriate antibiotic therapy. Horses: For use in the alleviation of inflammation and relief of pain in both acute and chronic musculo-skeletal disorders. For the relief of pain associated with equine colic. Contraindications Do not use in horses less than 6 weeks of age. Do not use in animals suffering from impaired hepatic, cardiac or renal function and haemorrhagic disorders, or where there is evidence of ulcerogenic gastrointestinal lesions. Do not use in case of hypersensitivity to the active substance or to any of the excipients. For the treatment of diarrhoea in cattle, do not use in animals of less than one week of age. Special precautions for use in animals If adverse reactions occur, treatment should be discontinued and the advice of a veterinarian should be sought. Avoid use in very severely dehydrated, hypovolaemic or hypotensive animals which require parenteral rehydration, as there may be a potential risk of renal toxicity. In case of inadequate relief of pain when used in the treatment of equine colic, careful re-evaluation of the diagnosis should be made as this could indicate the need for surgical intervention. Special precautions to be taken by the person administering the veterinary medicinal product to animals Accidental self-injection may give rise to pain. People with known hypersensitivity to Non-Steroidal Anti-Inflammatory Drugs (NSAID) should avoid contact with the veterinary medicinal product. In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician. Adverse reactions (frequency and seriousness) In cattle and pigs, subcutaneous, intramuscular as well as intravenous administration are tolerated well; only a slight transient swelling at the injection site following subcutaneous administration was observed in less than 10 % of the cattle treated in clinical studies. In horses, a transient swelling at the injection site can occur but heals without intervention. In very rare cases anaphylactoid reactions, which may be serious (including fatal), may occur and should be treated symptomatically. Use during pregnancy or lactation Cattle and pigs: Can be used during pregnancy. Horses: Do not use in pregnant or lactating mares. Interaction with other medicinal products and other forms of interaction Do not administer concurrently with glucocorticosteroids, other non-steroidal anti-inflammatory drugs or with anti-coagulant agents. Amounts to be administered and administration route Cattle: Single subcutaneous or intravenous injection at a dosage of 0.5 mg meloxicam/kg body weight (i.e. 2.5 ml/100 kg body weight) in combination with antibiotic therapy or with oral re-hydration therapy, as appropriate. Pigs: Single intramuscular injection at a dosage of 0.4 mg meloxicam/kg body weight (i.e. 2.0 ml/100 kg body weight) in combination with antibiotic therapy, as appropriate. If required, a second administration of meloxicam can be given after 24 hours. Horses: Single intravenous injection at a dosage of 0.6 mg meloxicam/kg body weight (i.e. 3.0 ml/100 kg body weight). Avoid introduction of contamination during use. Overdose In the event of an overdose symptomatic treatment should be initiated. Withdrawal periods Cattle :Meat and offal: 15 days, milk:5 days. Pigs: Meat and offal: 5 days. Horses: Meat and offal: 5 days. Not authorised for use in horses producing milk for human consumption. Shelf life Shelf life of the veterinary medicinal product as packaged for sale: 30 months. Shelf life after first opening the immediate packaging: 28 days. Special precautions for storage Keep injection vial in the outer carton in order to protect from light. Do not refrigerate or freeze. Protect from frost. 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. Marketing authorisation number: EU/2/09/098/002-004 Marketing authorisation holder Dopharma Research B.V., Zalmweg 24, 4941 VX, Raamsdonksveer, The Netherlands

## Melovem® 30 mg/ml

Composition: meloxicam 30 mg/ml, benzyl alcohol 20 mg/ml Target species Cattle and pigs Indications for use, specifying the target species Cattle: For use in acute respiratory infections with appropriate therapy to reduce clinical sings in cattle. For use in diarrhoea in combination with oral re-hydration therapy to reduce clinical sigs in calves of over one week of age and young, non-lactating cattle. For adjunctive therapy in the treatment of acute mastitis, in combination with antibiotic therapy. For the relief of post-operative pain following dehorning in calves. Pigs: For use in non-infectious locomotor disorders to reduce the symptoms of lameness and inflammation. For adjunctive therapy in the treatment of puerperial septicaemia and toxaemia (mastitis-metritis-agalactia syndrome) with appropriate antibiotic therapy. Contraindications Do not use in animals suffering from impaired hepatic, cardiac or renal function and haemorrhagic disorders, or where there is evidence of ulcerogenic gastrointestinal lesions. Do not use in case of hypersensitivity to the active substance or to any of the excipients. For the treatment of diarrhoea in cattle, do not use in animals of less than one week of age. Special precautions for use in animals If adverse reactions occur, treatment should be discontinued and the advice of a veterinarian should be sought. Avoid use in very severely dehydrated, hypovolaemic or hypotensive animals which require parenteral rehydration, as there may be a potential risk of renal toxicity. Special precautions to be taken by the person administering the veterinary medicinal product to animals Accidental self-injection may give rise to pain. People with known hypersensitivity to Non-Steroidal Anti-Inflammatory Drugs (NSAID) should avoid contact with the veterinary medicinal product. In case of accidental self-injection, seek medical advice immediately and show the package leaflet or the label to the physician. Adverse reactions (frequency and seriousness) In cattle and pigs, subcutaneous as well as intramuscular administration are tolerated well; only a slight transient swelling at the injection site following subcutaneous administration was observed in less than 10 % of the cattle treated in clinical studies. In very rare cases anaphylactoid reactions, which may be serious (including fatal), may occur and should be treated symptomatically. Use during pregnancy or lactation Can be used during pregnancy and lactation. Interaction with other medicinal products and other forms of interaction Do not administer concurrently with glucocorticosteroids, other non-steroidal anti-inflammatory drugs or with anti-coagulant agents. Amounts to be administered and administration route Cattle: Single subcutaneous injection at a dosage of 0.5 mg meloxicam/kg body weight (i.e. 2.5 ml/150 kg body weight) in combination with antibiotic therapy or with oral re-hydration therapy, as appropriate. Pigs: Single intramuscular injection at a dosage of 0.4 mg meloxicam/kg body weight (i.e. 2.0 ml/150 kg body weight) in combination with antibiotic therapy, as appropriate. If required, a second administration of meloxicam can be given after 24 hours. Avoid introduction of contamination during use. Overdose In the event of an overdose symptomatic treatment should be initiated. Withdrawal periods Cattle: Meat and offal: 15 days. Milk: 5 days. Pigs: Meat and offal: 5 days. Shelf life Shelf life of the veterinary medicinal product as packaged for sale: 30 months. Shelf life after first opening the immediate packaging: 28 days. Special precautions for storage This veterinary medicinal product does not require any special temperature storage conditions. 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. Marketing authorisation number: EU/2/09/098/005-007 Marketing authorisation holder Dopharma Research B.V., Zalmweg 24, 4941 VX, Raamsdonksveer, The Netherlands

## References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