

# AUSTRALIAN PRODUCT INFORMATION – ORUDIS® SR CAPSULES (KETOPROFEN)

## 1 NAME OF THE MEDICINE

Ketoprofen

## 2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each Orudis SR capsule contains ketoprofen 200 mg.

For the full list of excipients, see Section 6.1 List of excipients.

## 3 PHARMACEUTICAL FORM

Orudis SR Capsules: modified release, hard gelatin capsule. Clear pink base & white opaque cap. Base and cap printed 'ORUDIS SR 200' and contains off-white to cream spherical pellets.

## 4 CLINICAL PARTICULARS

### 4.1 THERAPEUTIC INDICATIONS

Rheumatoid arthritis, osteoarthritis.

### 4.2 DOSE AND METHOD OF ADMINISTRATION

After assessing the risk/benefit ratio in each individual patient, the lowest effective dose for the shortest possible duration should be used (see Section 4.4 Special warnings and precautions for use). Patients on long term treatment should be reviewed regularly with regards to efficacy, risk factors and ongoing need for treatment.

**Orudis SR (Sustained Release) Capsules:** 200 mg once daily depending on the patient's weight and on the severity of symptoms. Orudis SR should be taken with food.

**Use in the Elderly:** It is generally advisable in the elderly to begin ketoprofen therapy at the lower end of the dosage range and to maintain such patients on the lowest effective dosage.

**Use in Pregnancy:** see Section 4.3 Contraindications and Section 4.6 Fertility, pregnancy and lactation.

### 4.3 CONTRAINDICATIONS

Active or a history of gastrointestinal inflammatory disorder or ulceration, haemorrhage, chronic dyspepsia.

History of gastrointestinal bleeding or perforation, related to previous NSAIDs therapy.

Known hypersensitivity to ketoprofen, aspirin or other NSAIDs.

Patients in whom aspirin or other non-steroidal anti-inflammatory agents induce symptoms of asthma, rhinitis or urticaria. Severe, rarely fatal anaphylactic reactions have been reported in such patients.

Third trimester of pregnancy (see Section 4.6 Fertility, pregnancy and lactation).

Severe heart failure.

Severe renal insufficiency.

Severe hepatic impairment.

Treatment of perioperative pain in setting of coronary artery bypass surgery (CABG).

#### **4.4 SPECIAL WARNINGS AND PRECAUTIONS FOR USE**

##### **Cardiovascular Thrombotic Events**

Observational studies have shown that non-selective NSAIDs may be associated with an increased risk of serious CV events including myocardial infarction, stroke and heart failure, which may increase with dose or duration of use. Additionally patients with CV disease, history of atherosclerotic CV disease or risk factors for CV disease may be at greater risk. However, to minimise the potential risk of an adverse CV event, especially in patients with CV risk factors, the lowest effective dose should be used for the shortest possible duration.

There is no consistent evidence to suggest that concurrent use of aspirin mitigates the increased risk of serious CV events associated with NSAID use.

Physicians and patients should remain alert for such CV events, even in the absence of previous CV symptoms. Patients should be informed about signs and/or symptoms of serious CV toxicity and the steps to take if they occur.

An increased risk for arterial thrombotic events has been reported in patients treated with non-aspirin NSAIDs for perioperative pain in the setting of coronary artery bypass surgery (see Section 4.3 Contraindications).

##### **Hypertension**

NSAIDs can lead to onset of new hypertension or worsening of pre-existing hypertension. Patients taking antihypertensives along with NSAIDs may have an impaired antihypertensive response and hence NSAIDs should be administered with caution in patients with hypertension. Furthermore, when given to patients with hypertension, blood pressure should be monitored closely during initiation of NSAID treatment and at regular intervals thereafter.

Increased risk of atrial fibrillation has been reported in association with the use of NSAIDs.

## **Heart Failure**

Fluid retention and oedema have been observed in some patients taking NSAIDs and NSAIDs should be used with caution in patients with fluid retention or heart failure.

## **Gastrointestinal Events**

All NSAIDs can cause GI discomfort and serious, potentially fatal GI effects such as ulcers, bleeding and perforation which may increase with dose or duration of use, but can occur at any time without warning. Upper GI ulcers, gross bleeding or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3-6 months and in about 2-4% of patients treated for one year. These trends continue with longer duration of use, increasing the likelihood of developing a serious GI event at some time during the course of therapy. However, even short term therapy is not without risk.

Due to the possibility of severe gastrointestinal lesions, particular attention should be paid to any digestive disturbance and especially to gastrointestinal bleeding. This risk is especially high in patients who continue to receive anticoagulant therapy. Elderly patients are at greater risk for serious GI events. Other risk factors associated with increased risk of developing serious GI events include history of serious GI events, smoking and alcoholism. When gastrointestinal bleeding or ulcerations occur in patients receiving NSAIDs, the medicine should be withdrawn immediately. Doctors should warn patients about the signs and symptoms of serious GI toxicity and what steps to take if they occur. The risk of serious GI events associated with ketoprofen ranged from 0.03 to 1.7% with a higher incidence in elderly.

The concurrent use of NSAIDs and aspirin does increase the risk of serious GI events.

Caution should be advised in patients receiving concomitant medications which could increase the risk of ulceration or bleeding, such as oral corticosteroids, anticoagulants such as warfarin, selective serotonin-reuptake inhibitors, nicorandil or anti-platelet agents such as aspirin (see Section 4.5 Interactions with other medicines and other forms of interactions).

Because serious GI-tract ulceration and bleeding can occur without warning symptoms, physicians should follow chronically treated patients for the signs and symptoms of ulceration and bleeding and should inform them of the importance of this follow-up.

## **Serious Skin Reactions**

NSAIDs may very rarely cause serious cutaneous adverse events such as exfoliative dermatitis, Stevens-Johnson Syndrome (SJS), Toxic Epidermal Necrolysis (TEN) and drug reaction with eosinophilia and systemic symptoms (DRESS) syndrome (see Drug Reaction with Eosinophilia with Systemic Symptoms (DRESS)), which can be fatal and occur without warning. These serious adverse events are idiosyncratic and are independent of dose or duration of use. Patients appear to be at highest risk of these reactions early in the course of therapy, the onset of the reaction occurring in the majority of cases within the first month of treatment. Patients should be advised of the signs and symptoms of serious skin reactions and to consult their doctor at the first appearance of skin rash or any signs of hypersensitivity.

## **Fixed Drug Eruption (FDE)**

Cases of Fixed Drug Eruption (FDE) have been reported with Orudis SR. Orudis SR should not be reintroduced in patients with history of related FDE.

## **Drug reaction with Eosinophilia with Systemic Symptoms (DRESS):**

DRESS has been reported in patients using NSAIDs. Some of these events have been fatal or life-threatening. DRESS typically, although not exclusively, presents with fever, rash, lymphadenopathy, and/or facial swelling. Other clinical manifestations may include hepatitis, nephritis, haematological abnormalities, myocarditis, or myositis. Sometimes symptoms of DRESS may resemble an acute viral infection. Eosinophilia is often present. Because this disorder is variable in its presentation, other organ systems not noted here may be involved. It is important to note that early manifestations of hypersensitivity, such as fever or lymphadenopathy, may be present even though rash is not evident. If such signs or symptoms are present, discontinue the NSAID and evaluate the patient immediately.

## **Steroid Therapy**

Withdrawal of concomitant steroid therapy. It is recommended that if steroids are reduced or discontinued during ketoprofen therapy, the dose should be reduced slowly and patients should be observed closely for adverse effects particularly adrenal insufficiency and exacerbation of the symptoms of rheumatoid arthritis.

## **Infection**

Masking of symptoms of underlying infections:

Orudis SR can mask symptoms of infection, which may lead to delayed initiation of appropriate treatment and thereby worsening the outcome of the infection. This has been observed in bacterial community acquired pneumonia and bacterial complications to varicella. When Orudis SR is administered for fever or pain relief in relation to infection, monitoring of infection is advised. In non-hospital settings, the patient should consult a doctor if symptoms persist or worsen.

## **Haematology**

There have been sporadic reports of decreased haematocrit and haemoglobin values without progressive deterioration on prolonged administration of the medicine. Anaemia is commonly observed in rheumatoid arthritis patients and is sometimes aggravated by non-steroidal anti-inflammatory medicines which may produce fluid retention or significant gastrointestinal blood loss in some patients. Patients on long-term treatment with NSAIDs including ketoprofen, should have their haemoglobin or haematocrit checked if they develop signs or symptoms of anaemia.

## **Renal Function**

Inhibition of renal prostaglandin synthesis by NSAIDs may interfere with renal function, especially in the presence of existing renal disease. As with other NSAIDs, ketoprofen should be used with caution in patients with renal impairment. At the start of treatment and

periodically, renal function must be carefully monitored in patients with heart failure, cirrhosis and nephrosis, in patients receiving diuretic therapy, in patients with chronic renal impairment, particularly if the patient is elderly. In these patients, administration of ketoprofen may induce a reduction in renal blood flow caused by prostaglandin inhibition and lead to renal decompensation. Abnormalities in LDH and BUN have occurred in patients on Orudis SR therapy.

### **Hyperkalaemia**

Hyperkalaemia may occur, especially in patients with underlying diabetes, renal failure, and/or concomitant treatment with hyperkalaemia promoting agents. Potassium levels must be monitored under these circumstances (see Section 4.5 Interactions with other medicines and other forms of interactions).

### **Hepatic Function**

Impaired hepatic function. Serious hepatic adverse events appear to be rare with ketoprofen. Rare cases of jaundice and hepatitis have been described with ketoprofen. With NSAIDs abnormal liver function test (such as elevation of AST, ALT and SAP) may occur in upto 15 % of patients. These abnormalities may progress, may remain essentially unchanged, or may resolve with continued therapy. Meaningful elevations (three times the upper limit of normal) of ALT or AST occurred in controlled clinical trials in less than 1% of patients.

Physicians and patients should remain alert for the hepatotoxicity. Patients should be informed about the signs and/or symptoms of hepatotoxicity (e.g., nausea, fatigue, lethargy, pruritis, jaundice, abdominal tenderness in the right upper quadrant and "flu-like" symptoms) and the steps to take should these signs and/or symptoms occur. If an abnormal liver function test occurs liver function should be monitored until it returns to normal. If a significant abnormality persists, Orudis SR should be discontinued. It is recommended that in those patients with a history of liver dysfunction periodic liver function test be carried out.

Plasma protein binding medicines. Orudis SR is highly protein bound. Concomitant use of other protein binding medicines, e.g. anticoagulants, sulphonamides and hydantoins, might necessitate modification of dosage in order to avoid increased levels of such medicines resulting from competition for plasma protein binding sites.

### **Ophthalmological Effects**

Adverse ophthalmological effects have been observed with non-steroidal anti-inflammatory agents; accordingly, in patients who develop visual disturbances during treatment with Orudis, treatment should be discontinued pending a complete ophthalmological examination.

### **Oligohydramnios/Neonatal Renal Impairment:**

Use of NSAIDs, including Orudis SR, from about 13 weeks gestation or later in pregnancy may cause fetal renal dysfunction leading to oligohydramnios and, in some cases, neonatal renal impairment. These adverse outcomes are seen, on average, after days to weeks of treatment, although oligohydramnios has been infrequently reported as soon as 48 hours after NSAID initiation.

Oligohydramnios is often, but not always, reversible with treatment discontinuation. Complications of prolonged oligohydramnios may, for example, include limb contractures and delayed lung maturation. In some postmarketing cases of impaired neonatal renal function, invasive procedures such as exchange transfusion or dialysis were required.

If NSAID treatment is necessary between about 13 weeks and 30 weeks gestation, it should be managed under medical supervision and limit Orudis SR use to the lowest effective dose and shortest duration possible. Consider ultrasound monitoring of amniotic fluid if Orudis SR treatment extends beyond 48 hours. Discontinue Orudis SR if oligohydramnios occurs and follow up according to clinical practice (see Section 4.6 Fertility, pregnancy and lactation).

### **Use in hepatic impairment**

See Section 4.3 Contraindications, and Section 4.4 Special warnings and precautions for use - Hepatic Function.

### **Use in renal impairment**

See Section 4.3 Contraindications, Section 4.4 Special warnings and precautions for use - Renal Function and Use in the elderly, Section 4.5 - Interactions with other medicines and other forms of interactions - Digoxin and Combination use of ACE inhibitors or angiotensin receptor antagonists, anti-inflammatory medicines and thiazide diuretics.

### **Use in the elderly**

In pharmacokinetic studies, ketoprofen clearance was reduced in older patients receiving ketoprofen, compared with younger patients. Peak ketoprofen concentrations and free drug AUC were increased in older patients. The glucuronide conjugate of ketoprofen, which can serve as a potential reservoir for the parent drug, is known to be substantially excreted by the kidney. Because elderly patients are more likely to have decreased renal function, care should be taken in dose selection. It is recommended that the initial dosage of ketoprofen should be reduced for patients over 75 years of age and it may be useful to monitor renal function. In addition, the risk of toxic reactions to this drug may be greater in patients with impaired renal function. Elderly patients may be more sensitive to the anti-prostaglandin effects of NSAIDS (on the gastrointestinal tract and kidneys) than younger patients. In particular, elderly or debilitated patients who receive NSAID therapy seem to tolerate gastrointestinal ulceration or bleeding less well than other individuals, and most spontaneous reports of fatal GI events are in this population. Therefore, caution should be exercised in treating the elderly, and when individualizing their dosage, extra care should be taken when increasing the dose.

See Section 4.2 Dose and method of administration.

### **Paediatric use**

Ketoprofen is not recommended for children under 12 years since safety and efficacy in this age group have not been established.

### **Effects on laboratory tests**

No data available.

#### **4.5 INTERACTIONS WITH OTHER MEDICINES AND OTHER FORMS OF INTERACTIONS**

The following interactions have been studied using conventional ketoprofen at a dose of 200 mg daily.

##### **Medicinal products that can promote hyperkalaemia**

The risk of hyperkalaemia can be enhanced when ketoprofen is administered concomitantly with potassium salts, potassium-sparing diuretics, ACE inhibitors and angiotensin II antagonists, NSAIDs, heparins (low molecular-weight or unfractionated), ciclosporin, tacrolimus and trimethoprim (see Section 4.4 Special warnings and precautions for use).

##### **Antacids**

Concomitant administration of magnesium hydroxide and aluminium hydroxide hydrate does not interfere with the rate or extent of the absorption of ketoprofen.

##### **NSAIDs (including cyclooxygenase-2 selective inhibitors) and high dose salicylates (eg. Aspirin)**

Ketoprofen may present an additive effect with other NSAIDs (increased risk of gastrointestinal ulcer and/or haemorrhage). Therefore, concomitant administration is not advised.

Ketoprofen does not alter aspirin absorption. However, in a study of 12 normal subjects, concurrent administration of aspirin decreased ketoprofen protein binding and increased ketoprofen plasma clearance from 0.07 L/kg/hour without aspirin to 0.11 L/kg/hour with aspirin. The clinical significance of these changes has not been adequately studied. Therefore, concurrent use of aspirin and ketoprofen is not recommended.

##### **Diuretics**

Hydrochlorothiazide given concomitantly with ketoprofen produces a reduction in urinary potassium and chloride excretion compared to hydrochlorothiazide alone. Patients and particularly dehydrated patients, taking diuretics are at greater risk of developing renal failure secondary to a decrease in renal blood flow caused by prostaglandin inhibition. Such patients should be rehydrated before initiating coadministration therapy and renal function monitored when the treatment is started.

##### **Digoxin**

In a study of 12 patients with congestive heart failure where ketoprofen and digoxin were concomitantly administered, ketoprofen did not alter the serum levels of digoxin. However, caution is advised, in particular in patients with renal impairment, since NSAIDs may reduce renal function and decrease renal clearance of cardiac glycosides.

## **Lithium**

There is a risk of elevation of lithium plasma levels, sometimes reaching toxic levels, due to decreased lithium renal excretion. Where necessary, plasma lithium levels should be closely monitored and the lithium dosage levels adjusted during and after NSAIDs therapy.

## **Parenteral heparin and platelet aggregation inhibitors (ie. ticlopidine, clopidogrel)**

Increased risk of bleeding. If concomitant use is unavoidable, patient should be closely monitored including laboratory test results (bleeding time).

## **Thrombin inhibitors (such as dabigatran), Direct factor Xa inhibitors (such as apixaban, rivaroxaban)**

Increased risk of bleeding. If coadministration is unavoidable, patient should be closely monitored.

## **Vitamin K antagonists (such as warfarin)**

Concurrent use of NSAIDs and warfarin has been associated with severe, sometimes fatal haemorrhage. The exact mechanism of the interaction between NSAIDs and warfarin is unknown, but may involve enhanced bleeding from NSAID-induced gastrointestinal ulceration, or an additive effect of anticoagulation by warfarin and inhibition of platelet function by NSAIDs. Ketoprofen should be used in combination with warfarin only if absolutely necessary, and patients taking this combination of medicines should be closely monitored.

## **Probenecid**

Probenecid increases both free and bound ketoprofen through reducing the plasma clearance of ketoprofen to about one-third as well as decreasing its protein binding. Therefore, the combination of ketoprofen and probenecid is not recommended.

## **Methotrexate**

Methotrexate at doses greater than 15 mg/week: Methotrexate is highly protein bound and may be displaced by NSAIDs including ketoprofen. Concomitant administration of some NSAIDs with high dose methotrexate therapy has been reported to elevate and prolong serum methotrexate levels, resulting in severe haematologic and gastrointestinal toxicity which may lead to death. Methotrexate at doses lower than 15 mg/week: During the first weeks of combination treatment, full blood count should be monitored weekly. If there is any alteration of the renal function, or if patient is elderly, monitoring should be more frequent.

## **Ciclosporin and Tacrolimus**

There is increased risk of nephrotoxicity.



### **Pentoxifylline (oxpentifylline)**

There is an increased risk of bleeding. More frequent clinical monitoring and monitoring of bleeding time is required.

### **Tenofovir**

Concomitant administration of tenofovir disoproxil fumarate and NSAIDs may increase the risk of renal failure.

### **Nicorandil**

In patients concomitantly receiving nicorandil and NSAIDs, there is an increased risk for severe complications such as gastrointestinal ulceration, perforation and haemorrhage (see Section 4.4 Special warnings and precautions for use - Gastrointestinal Events).

### **Antihypertensive agents (beta-blockers, angiotensin converting enzyme inhibitors, diuretics)**

There is a risk of decrease in antihypertensive potency (inhibition of vasodilator prostaglandins by NSAIDs).

### **ACE inhibitors and Angiotensin II antagonists**

In patients with compromised renal function (e.g. dehydrated patients or elderly patients), the co-administration of an ACE inhibitor or Angiotensin II antagonist and agents that inhibit cyclo-oxygenase may result in further deterioration of renal function, including possible acute renal failure.

### **Combination use of ACE inhibitors or angiotensin receptor antagonists, anti-inflammatory medicines and thiazide diuretics**

Concomitant use of a renin-angiotensin system inhibiting medicine (ACE-inhibitor or angiotensin receptor antagonist), an anti-inflammatory medicine (NSAID, including COX-2 inhibitor) and a thiazide diuretic may increase the risk of renal impairment. This includes use in fixed-combination products containing more than one class of medicine. The combination of these agents should be administered with caution, especially in the elderly and in patients with pre-existing renal impairment. Renal function (serum creatinine) should be monitored after initiation of concomitant therapy, and periodically thereafter.

### **Thrombolytics**

There is an increased risk of bleeding.

### **Gemeprost**

The efficacy of gemeprost may be reduced.

## **IUD**

The efficacy of IUDs may be reduced and result in a pregnancy.

## **Corticosteroids**

Increased risk of gastrointestinal ulceration or bleeding (see Section 4.4 Special warnings and precautions for use - Gastrointestinal Events and Steroid Therapy).

## **Selective serotonin reuptake inhibitors (SSRI's)**

Increased risk of gastrointestinal bleeding (see Section 4.4 Special warnings and precautions for use - Gastrointestinal Events).

## **4.6 FERTILITY, PREGNANCY AND LACTATION**

### **Effects on fertility**

The use of NSAIDs may impair female fertility and is not recommended in women attempting to conceive. In women who have difficulties conceiving or who are undergoing investigation of infertility, withdrawal of the NSAID should be considered.

### **Use in pregnancy**

Pregnancy Category C - Drugs which, owing to their pharmacological effects, have caused or may be suspected of causing, harmful effects on the human fetus or neonate without causing malformations. These effects may be reversible. Accompanying texts should be consulted for further details.

Inhibition of prostaglandin synthesis may adversely affect the pregnancy and/or the embryo/fetal development. Data from epidemiological studies suggest an increased risk of miscarriage and of cardiac malformation and gastroschisis after use of a prostaglandin synthesis inhibitor in early pregnancy. The absolute risk for cardiovascular malformation was increased from less than 1%, up to approximately 1.5%. The risk is believed to increase with dose and duration of therapy.

In animals, administration of a prostaglandin synthesis inhibitor has been shown to result in increased pre- and post-implantation loss and embryo-fetal lethality. In addition, increased incidences of various malformations including cardiovascular, have been reported in animals given a prostaglandin synthesis inhibitor during the organogenetic period.

During the first and second trimesters:

In mice and rats there is no evidence of teratogenic or embryotoxicity. In the rabbit slight embryotoxicity likely related to maternal toxicity has been reported. The use of Orudis SR during the first and second trimesters of pregnancy should be avoided unless clearly necessary. If ketoprofen is used, the dose should be kept as low and duration of treatment as short as possible (see Section 4.4 Special warnings and precautions for use).

During the second and third trimesters:

Use of NSAIDs, including Orudis SR, from about 13 weeks gestation or later in pregnancy has been associated with cases of fetal renal dysfunction leading to oligohydramnios, and in some cases, neonatal renal impairment (see Section 4.4 Special warnings and precautions for use).

#### *Fetal and neonatal toxicity*

During the second and third trimesters of pregnancy, all prostaglandin synthesis inhibitors may expose the fetus to:

- cardiopulmonary toxicity (constriction/premature closure of the ductus arteriosus and pulmonary hypertension); which resolves after treatment cessation in majority of cases. Antenatal monitoring for ductus arteriosus constriction should be considered after exposure to Orudis SR for several days from gestational week 13 onward. Orudis SR should be discontinued if ductus arteriosus constriction is found.
- renal dysfunction, which may progress to renal failure with oligohydramnios.

NSAIDs have an inhibitory effect on prostaglandin synthesis and, when given during the latter part of pregnancy, may cause cardiopulmonary (closure of the fetal ductus arteriosus) and renal toxicity. When given at term, they prolong labour and delay parturition.

At the end of the pregnancy:

- prolonged bleeding time in both the mother and child may occur.
- inhibition of uterine contractions resulting in delayed or prolonged labour may occur.

Therefore, Orudis SR is contraindicated during the last trimester of pregnancy.

#### **Use in lactation**

No data are available on excretion of ketoprofen in human milk. In rats, ketoprofen at doses of 9 mg/kg (54 mg/m<sup>2</sup>/day; approximately 0.3 times the maximum recommended human therapeutic dose) did not affect perinatal development. Upon administration to lactating dogs, the milk concentration of ketoprofen was found to be 4 to 5% of the plasma drug level. As with other medicines that are excreted in milk, ketoprofen is not recommended for use in nursing mothers.

#### **4.7 EFFECTS ON ABILITY TO DRIVE AND USE MACHINES**

Patients should be warned about the potential for somnolence, dizziness or convulsions, and advised not to drive or operate machinery if these symptoms occur.

#### **4.8 ADVERSE EFFECTS (UNDESIRABLE EFFECTS)**

The following adverse events have been observed with ketoprofen.

#### **More Common Reactions**

(Incidence greater than 1%)

### ***Gastrointestinal***

Dyspepsia (11.5%), nausea\*, abdominal pain\*, diarrhoea\*, constipation\*, flatulence\*, anorexia, vomiting, stomatitis, gastralgia.

### ***Central nervous system***

Headache\*, dizziness, CNS inhibition or excitation\*.

### ***Special senses***

Tinnitus, visual disturbance.

### ***Dermatological***

Rash.

### ***Urogenital***

Impairment of renal function (oedema, increased BUN)\*, signs or symptoms of urinary tract irritation.

\* Incidence greater than 3%

### **Less Common Reactions**

(Incidence less than 1%)

### ***Gastrointestinal***

Appetite increase, dry mouth, gastralgia, dyspepsia, abdominal pain, nausea, vomiting, diarrhoea, constipation, flatulence, eructation, gastritis, stomatitis, rectal haemorrhage, melaena, faecal occult blood, salivation, peptic ulcer, gastrointestinal perforation, haematemesis, intestinal ulceration, gastrointestinal bleeding, exacerbation of colitis and Crohn's disease, pancreatitis.

### ***Central Nervous System***

Amnesia, confusion, impotence, migraine, paraesthesia, vertigo, fatigue, tension, anxiety, drowsiness, convulsions, depression, hallucinations, aseptic meningitis, mood disorder.

Aseptic meningitis has been reported as a potential rare adverse effect from the administration of several anti-inflammatory medications, including selective and non-selective COX inhibitors.

### ***Special senses***

Conjunctivitis, conjunctivitis sicca, eye pain, hearing impairment, retinal haemorrhage and pigmentation change, taste perversion.

### ***Dermatological***

Alopecia, eczema, pruritus, purpuric rash, sweating, urticaria, angio-oedema, bullous rash including Stevens-Johnson, toxic epidermal necrolysis, exfoliative dermatitis, photosensitivity discolouration, onycholysis, flushing, acute generalized exanthematous pustulosis.

### ***Body as a whole***

Chills, oedema, pain, allergic reaction, anaphylactic reactions (including shock).

### ***Cardiovascular***

Hypertension, palpitation, tachycardia, congestive heart failure, peripheral vascular disease, vasodilation, vasculitis (including leukocytoclastic vasculitis), bruising, exacerbation of heart failure, atrial fibrillation.

### ***Haematological***

Hypocoagulability, agranulocytosis, anaemia, haemolysis, purpura, thrombocytopenia, bone marrow aplasia, hemolytic anemia, leucopenia.

### ***Metabolic and nutritional***

Thirst, weight gain, weight loss, hepatic dysfunction, hyponatraemia, hyperkalaemia, elevations of transaminases levels, rare cases of hepatitis.

### ***Mouth***

Mouth ulcers, sore tongue, inflammation of the mouth and gum have been reported.

### ***Infections and Infestations***

Orudis SR can mask symptoms of infection, which may lead to delayed initiation of appropriate treatment and thereby worsening the outcome of infection (including bacterial community-acquired pneumonia and bacterial complications to varicella (Section 4.4 Special warnings and precautions for use)).

### ***Musculoskeletal***

Myalgia.

### ***Respiratory***

Dyspnoea, haemoptysis, epistaxis, pharyngitis, rhinitis, laryngeal oedema, asthmatic attack, bronchospasm, (particularly in patients with hypersensitivity to aspirin and other NSAIDs).

### ***Urogenital***

Menometrorrhagia, haematuria, renal failure, abnormal renal function tests, interstitial nephritis, nephrotic syndrome.

### ***Anorectal***

These include local pain, burning, pruritus, tenesmus, rarely rectal bleeding, which have been reported in approximately 16% of patients. In clinical trials 5% of patients discontinued rectal therapy for these reasons.

### ***Hypersensitivity reactions***

Dermatological reactions, rash, pruritus, urticaria, angioedema.

### **Post Marketing Experience:**

#### **Pregnancy, puerperium and perinatal conditions**

Unknown: Oligohydramnios, neonatal renal impairment

#### **Skin and subcutaneous tissue disorders**

Unknown: Drug Reaction with Eosinophilia with Systemic Symptoms (DRESS), Fixed Drug Eruption (FDE).

### **Reporting suspected adverse effects**

Reporting suspected adverse reactions after registration of the medicinal product is important. It allows continued monitoring of the benefit-risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions at [www.tga.gov.au/reporting-problems](http://www.tga.gov.au/reporting-problems).

## **4.9 OVERDOSE**

Signs and symptoms following acute NSAID overdose are usually limited to lethargy, drowsiness, abdominal pain, nausea and vomiting, which are generally reversible with supportive care. Respiratory depression, coma or convulsions have occurred following large ketoprofen overdoses. Gastrointestinal bleeding, hypotension, hypertension, or acute renal failure may occur, but are rare.

Patients should be managed by symptomatic and supportive care following an NSAID overdose. There are no specific antidotes. Gut decontamination may be indicated in patients with symptoms seen within 4 hours (longer for sustained release products) or following a large overdose (5 to 10 times the usual dose). Administration of activated charcoal in an attempt to reduce absorption of ketoprofen should be considered. Forced diuresis, alkalinization of the urine, haemodialysis or haemoperfusion would probably not be useful due to ketoprofen's high protein binding.

Due to the sustained release characteristics of Orudis SR, it should be expected that ketoprofen will continue to be absorbed for up to 16 hours after ingestion.

For information on the management of overdose, contact the Poisons Information Centre on 13 11 26 (Australia).

## **5 PHARMACOLOGICAL PROPERTIES**

### **5.1 PHARMACODYNAMIC PROPERTIES**

Pharmacotherapeutic group: Non-steroidal anti-inflammatory and antirheumatic products, propionic acid derivatives, ATC code: M01AE03

#### **Mechanism of action**

Animal pharmacological studies have shown that ketoprofen has anti-inflammatory, analgesic and antipyretic properties. It also inhibits prostaglandin synthetase. Ketoprofen has been shown to possess antibradykinin activity in guinea pigs and mice. Inhibition of platelet aggregation has been demonstrated in rabbits.

Ketoprofen reduces joint pain and inflammation and facilitates increase in mobility and functional independence. As with other non-steroidal anti-inflammatory agents, it does not cure the underlying disease.

#### **Clinical trials**

No data available.

### **5.2 PHARMACOKINETIC PROPERTIES**

Ketoprofen is readily absorbed from the gastrointestinal tract, peak plasma concentration occur 0.5 to 2 hours after a single dose. Some retardation in absorption occurs with food. The plasma half-life is about 1.6 to 1.9 hours. Binding to serum proteins (to albumin) of about 62 to 93% has been observed.

Major route of metabolism involves glucuronide formation. Traces also of ring hydroxylated derivatives have been detected. Metabolites are not biologically active.

Ketoprofen does not induce hepatic microsomal enzymes.

Excretion of mainly metabolised (up to 55%) ketoprofen after oral administration varies greatly amongst patients, 30 to 90% of the dose being excreted in urine in 24 hours. Apparent faecal excretion of metabolites ranges over 1 to 8% of orally administered dose in 5 day collections.

The absorption and elimination profiles from oral and rectal administration are identical.

The sustained release form of ketoprofen is based upon a multiple pellet system, each pellet acting as an individual delivery system bounded by a pH sensitive dialysing membrane which prevents release of ketoprofen in the stomach. About 100 pellets are needed to deliver each 100 mg of ketoprofen.

Owing to gradual release of ketoprofen, maximum plasma concentrations occur around 6 hours after administration of a single dose of 200 mg of ketoprofen. These are considerably lower (3.5 + 1 microgram/mL) than those after a single dose of 100 mg of conventional ketoprofen (10 microgram/mL). The release characteristics of Orudis SR result in an apparent elimination half-life of 8.4 hours.

There is some evidence that a heavy meal delays the absorption of ketoprofen from the sustained release formulation. However, the bioavailability of the product is unaffected.

Ketoprofen is eliminated by hepatic metabolism as an ester glucuronide conjugate; a minor pathway being aromatic hydroxylation, the resulting inactive metabolites being excreted by the kidney.

Peak plasma concentration of ketoprofen were higher (5 microgram/mL) and occurred later (10.1 hours) in elderly population (mean age 81) than in young healthy subjects (4.2 microgram/mL, 5.6 hours). The apparent elimination half-life was not significantly altered.

In a study using conventional ketoprofen, a decrease in ketoprofen conjugates and reduction in ketoprofen clearance was reported in elderly subjects (mean age 86.3 years).

Accumulation does not occur upon repeated administration of full adult doses of 200 mg/day provided there is no severe impairment of renal or hepatic function.

Severe impairment of renal function may result in impairment of excretion of conjugated ketoprofen and possible consequent regeneration of free ketoprofen from the conjugate.

Ketoprofen is highly protein bound.

### **Elderly: clearance & unbound fraction**

The plasma and renal clearance of ketoprofen is reduced in the elderly (mean age, 73 years) compared to a younger normal population (mean age, 27 years). Hence ketoprofen peak concentration and AUC increase with increasing age. Data from one trial suggest that the increase is greater in women than in men. It has not been determined whether age-related changes in absorption among the elderly contribute to the changes in bioavailability of ketoprofen (see Section 4.4 Special warnings and precautions for use - Use in the elderly).

## **5.3 PRECLINICAL SAFETY DATA**

### **Genotoxicity**

No data available.

### **Carcinogenicity**

No data available.



## **6 PHARMACEUTICAL PARTICULARS**

### **6.1 LIST OF EXCIPIENTS**

Orudis SR Capsules: Erythrosine, ethylcellulose, gelatin, non-pareil beads (PI 1014) (sucrose and maize starch), OPACODE monogramming ink S-1-20952 BLUE (PI 12300), shellac, colloidal anhydrous silica, sodium lauryl sulfate, purified talc and titanium dioxide.

### **6.2 INCOMPATIBILITIES**

Incompatibilities were either not assessed or not identified as part of the registration of this medicine.

### **6.3 SHELF LIFE**

In Australia, information on the shelf life can be found on the public summary of the Australian Register of Therapeutic Goods (ARTG). The expiry date can be found on the packaging.

### **6.4 SPECIAL PRECAUTIONS FOR STORAGE**

Store below 25°C. Store in a dry place.

### **6.5 NATURE AND CONTENTS OF CONTAINER**

Orudis SR 200 mg Capsules are available in the following presentations:

Blister pack of 4\*, 28, 30\* and 100\* capsules

\*non-marketed pack sizes

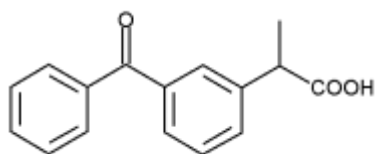
### **6.6 SPECIAL PRECAUTIONS FOR DISPOSAL**

In Australia, any unused medicine or waste material should be disposed of by taking to your local pharmacy.

### **6.7 PHYSICOCHEMICAL PROPERTIES**

Ketoprofen is DL-2-(3-benzoylphenyl) propionic acid. It is a white or off-white powder with melting point of about 93°C. MW: 254.3. Ketoprofen is very slightly soluble in water at 20°C, 2% soluble in dimethylformide and readily soluble in benzene, ethanol, chloroform, acetone and ethyl acetate at 20°C.

## Chemical structure



## CAS number

22071-15-4

## 7 MEDICINE SCHEDULE (POISONS STANDARD)

Prescription Medicine (Schedule 4)

## 8 SPONSOR

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## 9 DATE OF FIRST APPROVAL

21 October 1991

## 10 DATE OF REVISION

16 May 2024

### SUMMARY TABLE OF CHANGES

Section Changed	Summary of new information
4.2	Removal of "100" dose as it is no longer registered
4.4	New warning added re: "Fixed Drug Eruption"

4.6	New text added “inhibition of uterine contractions resulting in delayed or prolonged labour” Deletion of duplicate text
4.8	“FDE” event added under ‘Skin and subcutaneous tissue disorders’ with ‘Unknown’ frequency