

## SUMMARY OF PRODUCT CHARACTERISTIC

**1. Name of the Medicinal Product**

**Celebix 100 /200** (Celecoxib Capsules 100 mg /200 mg),

**2. Qualitative and Quantitative Composition**

Each Capsule contains:

Celecoxib USP.....100 mg/200 mg

**For Excipients see point 6.1**

**3. Pharmaceutical Form**

Capsule

**4. Clinical Particulars****4.1 Therapeutic indications**

Osteoarthritis (OA): Celecoxib is indicated for relief of the signs and symptoms of OA.

Rheumatoid Arthritis (RA): Celecoxib is indicated for relief of the signs and symptoms of RA.

Juvenile Rheumatoid Arthritis (JRA): Celecoxib is indicated for relief of the signs and symptoms of JRA in patients 2 years and older.

Ankylosing Spondylitis (AS): Celecoxib is indicated for the relief of signs and symptoms of AS.

Acute Pain (AP): Celecoxib is indicated for the management of AP in adults.

Primary Dysmenorrhea (PD): Celecoxib is indicated for the treatment of PD.

**4.2 Posology and method of administration**

Osteoarthritis: For relief of the signs and symptoms of OA the recommended oral dose is 200 mg per day administered as a single dose or as 100 mg twice daily.

Rheumatoid Arthritis: For relief of the signs and symptoms of RA the recommended oral dose is 100 to 200 mg twice daily.

Juvenile Rheumatoid Arthritis: For the relief of the signs and symptoms of JRA the recommended oral dose for pediatric patients (age 2 years and older) is based on weight. For patients >10 kg to <25 kg the recommended dose is 50 mg twice daily.

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For patients >25 kg the recommended dose is 100 mg twice daily.

Ankylosing Spondylitis: For the management of the signs and symptoms of AS, the recommended dose of celecoxib is 200 mg daily in single (once per day) or divided (twice per day) doses. If no effect is observed after 6 weeks, a trial of 400 mg daily may be worthwhile. If no effect is observed after 6 weeks on 400 mg daily, a response is not likely and consideration should be given to alternate treatment options.

Management of Acute Pain and Treatment of Primary Dysmenorrhea: The recommended dose of celecoxib is 400 mg initially, followed by an additional 200 mg dose if needed on the first day. On subsequent days, the recommended dose is 200 mg twice daily as needed.

### 4.3 Contraindications

Celecoxib is contraindicated:

- Hypersensitivity to the active substance or to any of the excipients.
- Known hypersensitivity to sulphonamides.
- Active peptic ulceration or gastrointestinal (GI) bleeding.
- Patients who have experienced asthma, acute rhinitis, nasal polyps, angioneurotic oedema, urticaria or other allergic-type reactions after taking acetylsalicylic acid (aspirin) or other NSAIDs including COX-2 inhibitors.
- In pregnancy and in women of childbearing potential unless using an effective method of contraception. Celecoxib has been shown to cause malformations in the two animal species studied. The potential for human risk in pregnancy is unknown, but cannot be excluded.
- Breast-feeding.
- Severe hepatic dysfunction (serum albumin <25 g/l or Child-Pugh score  $\geq 10$ ).
- Patients with estimated creatinine clearance <30 ml/min.
- Inflammatory bowel disease.
- Congestive heart failure (NYHA II-IV).
- Established ischaemic heart disease, peripheral arterial disease and/or cerebrovascular disease.

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**4.4 Special warnings and precautions for use**Gastrointestinal (GI) effects

Upper and lower gastrointestinal complications [perforations, ulcers or bleedings (PUBs)], some of them resulting in fatal outcome, have occurred in patients treated with celecoxib. Caution is advised with treatment of patients most at risk of developing a gastrointestinal complication with NSAIDs; the elderly, patients using any other NSAID or acetylsalicylic acid concomitantly, glucocorticoids, patients using alcohol, or patients with a prior history of gastrointestinal disease, such as ulceration and GI bleeding.

There is further increase in the risk of gastrointestinal adverse effects for celecoxib (gastrointestinal ulceration or other gastrointestinal complications), when celecoxib is taken concomitantly with acetylsalicylic acid (even at low doses). A significant difference in GI safety between selective COX-2 inhibitors + acetylsalicylic acid vs. NSAIDs + acetylsalicylic acid has not been demonstrated in long-term clinical trials.

Concomitant NSAID use

The concomitant use of celecoxib and a non-aspirin NSAID should be avoided.

Cardiovascular effects

Increased number of serious cardiovascular events, mainly myocardial infarction, has been found in a long-term placebo-controlled study in subjects with sporadic adenomatous polyps treated with celecoxib at doses of 200 mg BID and 400 mg BID compared to placebo.

As the cardiovascular risks of celecoxib may increase with dose and duration of exposure, the shortest duration possible and the lowest effective daily dose should be used. The patient's need for symptomatic relief and response to therapy should be re-evaluated periodically, especially in patients with osteoarthritis.

Patients with significant risk factors for cardiovascular events (e.g. hypertension, hyperlipidaemia, diabetes mellitus, smoking) should only be treated with celecoxib after careful consideration.

COX-2 selective inhibitors are not a substitute for acetylsalicylic acid for prophylaxis of cardiovascular thrombo-embolic diseases because of their lack of antiplatelet effects. Therefore, antiplatelet therapies should not be discontinued.

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Fluid retention and oedema

As with other drugs known to inhibit prostaglandin synthesis, fluid retention and oedema have been observed in patients taking celecoxib. Therefore, celecoxib should be used with caution in patients with history of cardiac failure, left ventricular dysfunction or hypertension, and in patients with pre-existing oedema from any other reason, since prostaglandin inhibition may result in deterioration of renal function and fluid retention. Caution is also required in patients taking diuretic treatment or otherwise at risk of hypovolaemia.

Hypertension

As with all NSAIDs, celecoxib can lead to the onset of new hypertension or worsening of pre-existing hypertension, either of which may contribute to the increased incidence of cardiovascular events. Therefore, blood pressure should be monitored closely during the initiation of therapy with celecoxib and throughout the course of therapy.

Hepatic and renal effects

Compromised renal or hepatic function and especially cardiac dysfunction are more likely in the elderly and therefore medically appropriate supervision should be maintained.

NSAIDs, including celecoxib, may cause renal toxicity. Clinical trials with celecoxib have shown renal effects similar to those observed with comparator NSAIDs. Patients at greatest risk for renal toxicity are those with impaired renal function, heart failure, liver dysfunction, those taking diuretics, ACE-inhibitors, angiotensin II receptor antagonists, and the elderly. Such patients should be carefully monitored while receiving treatment with celecoxib.

Some cases of severe hepatic reactions, including fulminant hepatitis (some with fatal outcome), liver necrosis and, hepatic failure (some with fatal outcome or requiring liver transplant), have been reported with celecoxib. Among the cases that reported time to onset, most of the severe adverse hepatic events developed within one month after initiation of celecoxib treatment.

If during treatment, patients deteriorate in any of the organ system functions described above, appropriate measures should be taken and discontinuation of celecoxib therapy should be considered.

CYP2D6 inhibition

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Celecoxib inhibits CYP2D6. Although it is not a strong inhibitor of this enzyme, a dose reduction may be necessary for individually dose-titrated drugs that are metabolised by CYP2D6.

#### CYP2C9 poor metabolisers

Patients known to be CYP2C9 poor metabolisers should be treated with caution.

#### Skin and systemic hypersensitivity reactions

Serious skin reactions, some of them fatal, including exfoliative dermatitis, Stevens-Johnson syndrome, and toxic epidermal necrolysis, have been reported very rarely in association with the use of celecoxib. Patients appear to be at highest risk for 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. Serious hypersensitivity reactions (including anaphylaxis, angioedema and drug rash with eosinophilia and systemic symptoms (DRESS), or hypersensitivity syndrome), have been reported in patients receiving celecoxib. Patients with a history of sulphonamide allergy or any drug allergy may be at greater risk of serious skin reactions or hypersensitivity reactions. Celecoxib should be discontinued at the first appearance of skin rash, mucosal lesions, or any other sign of hypersensitivity.

#### General

Celecoxib may mask fever and other signs of inflammation.

#### Use with oral anticoagulants

In patients on concurrent therapy with warfarin, serious bleeding events, some of them fatal, have been reported. Increased prothrombin time (INR) with concurrent therapy has been reported. Therefore, this should be closely monitored in patients receiving warfarin/coumarin-type oral anticoagulants, particularly when therapy with celecoxib is initiated or celecoxib dose is changed. Concomitant use of anticoagulants with NSAIDS may increase the risk of bleeding. Caution should be exercised when combining celecoxib with warfarin or other oral anticoagulants, including novel anticoagulants (e.g. apixaban, dabigatran, and rivaroxaban).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Pharmacodynamic interactions

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Anticoagulants

Anticoagulant activity should be monitored particularly in the first few days after initiating or changing the dose of celecoxib in patients receiving warfarin or other anticoagulants since these patients have an increased risk of bleeding complications. Therefore, patients receiving oral anticoagulants should be closely monitored for their prothrombin time INR, particularly in the first few days when therapy with celecoxib is initiated or the dose of celecoxib is changed. Bleeding events in association with increases in prothrombin time have been reported, predominantly in the elderly, in patients receiving celecoxib concurrently with warfarin, some of them fatal.

Anti-hypertensives

NSAIDs may reduce the effect of anti-hypertensive medicinal products including ACE-inhibitors, angiotensin II receptor antagonists, diuretics and beta-blockers. As for NSAIDs, the risk of acute renal insufficiency, which is usually reversible, may be increased in some patients with compromised renal function (e.g. dehydrated patients, patients on diuretics, or elderly patients) when ACE inhibitors, angiotensin II receptor antagonists, and/or diuretics are combined with NSAIDs, including celecoxib. Therefore, the combination should be administered with caution, especially in the elderly. Patients should be adequately hydrated and consideration should be given to monitoring of renal function after initiation of concomitant therapy, and periodically thereafter.

Ciclosporin and Tacrolimus

Coadministration of NSAIDs and ciclosporin or tacrolimus may increase the nephrotoxic effect of ciclosporin or tacrolimus, respectively. Renal function should be monitored when celecoxib and any of these drugs are combined.

Acetylsalicylic acid

Celecoxib can be used with low-dose acetylsalicylic acid but is not a substitute for acetylsalicylic acid for cardiovascular prophylaxis. In the submitted studies, as with other NSAIDs, an increased risk of gastrointestinal ulceration or other gastrointestinal complications compared to use of celecoxib alone was shown for concomitant administration of low-dose acetylsalicylic acid.

Pharmacokinetic interactionsEffects of celecoxib on other drugs

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CYP2D6 Inhibition

Celecoxib is an inhibitor of CYP2D6. The plasma concentrations of drugs that are substrates of this enzyme may be increased when celecoxib is used concomitantly. Examples of drugs which are metabolised by CYP2D6 are antidepressants (tricyclics and SSRIs), neuroleptics, anti-arrhythmic drugs, etc. The dose of individually dose-titrated CYP2D6 substrates may need to be reduced when treatment with celecoxib is initiated or increased if treatment with celecoxib is terminated.

Concomitant administration of celecoxib 200 mg twice daily resulted in 2.6-fold and 1.5-fold increases in plasma concentrations of dextromethorphan and metoprolol (CYP2D6 substrates), respectively. These increases are due to celecoxib CYP2D6 inhibition of the CYP2D6 substrate metabolism.

CYP2C19 Inhibition

*In vitro* studies have shown some potential for celecoxib to inhibit CYP2C19 catalysed metabolism. The clinical significance of this *in vitro* finding is unknown. Examples of drugs which are metabolised by CYP2C19 are diazepam, citalopram and imipramine.

Methotrexate

In patients with rheumatoid arthritis celecoxib had no statistically significant effect on the pharmacokinetics (plasma or renal clearance) of methotrexate (in rheumatologic doses). However, adequate monitoring for methotrexate-related toxicity should be considered when combining these two drugs.

Lithium

In healthy subjects, co-administration of celecoxib 200 mg twice daily with 450 mg twice daily of lithium resulted in a mean increase in  $C_{max}$  of 16% and in AUC of 18% of lithium. Therefore, patients on lithium treatment should be closely monitored when celecoxib is introduced or withdrawn.

Oral contraceptives

*In an interaction study, celecoxib had no clinically relevant effects on the pharmacokinetics of oral contraceptives (1 mg norethisterone /35 micrograms ethinylestradiol).*

Glibenclamide/tolbutamide

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*Celecoxib does not affect the pharmacokinetics of tolbutamide (CYP2C9 substrate), or glibenclamide to a clinically relevant extent.*

Effects of other drugs on celecoxib*CYP2C9 Poor Metabolisers*

In individuals who are CYP2C9 poor metabolisers and demonstrate increased systemic exposure to celecoxib, concomitant treatment with CYP2C9 inhibitors such as fluconazole could result in further increases in celecoxib exposure. Such combinations should be avoided in known CYP2C9 poor metabolisers.

*CYP2C9 Inhibitors and Inducers*

Since celecoxib is predominantly metabolised by CYP2C9 it should be used at half the recommended dose in patients receiving fluconazole. Concomitant use of 200 mg single dose of celecoxib and 200 mg once daily of fluconazole, a potent CYP2C9 inhibitor, resulted in a mean increase in celecoxib  $C_{max}$  of 60% and in AUC of 130%. Concomitant use of inducers of CYP2C9 such as rifampicin, carbamazepine and barbiturates may reduce plasma concentrations of celecoxib.

*Ketoconazole and Antacids*

Ketoconazole or antacids have not been observed to affect the pharmacokinetics of celecoxib.

Paediatric population

Interaction studies have only been performed in adults.

**4.6 Fertility, Pregnancy and lactation**

Pregnancy Category C. Pregnancy category D from 30 weeks of gestation onward.

The potential for human risk in pregnancy is unknown, but cannot be excluded. Celecoxib, as with other drugs inhibiting prostaglandin synthesis, may cause uterine inertia and premature closure of the ductus arteriosus during the last trimester. Celecoxib is contraindicated in pregnancy and in women who can become pregnant. If a woman becomes pregnant during treatment, celecoxib should be discontinued.

Breast-feeding

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Administration of celecoxib to a limited number of lactating women has shown a very low transfer of celecoxib into breast milk. Women who take celecoxib should not breastfeed.

Fertility

Based on the mechanism of action, the use of NSAIDs, including celecoxib, may delay or prevent rupture of ovarian follicles, which has been associated with reversible infertility in some women.

**4.7 Effects on ability to drive and use machines**

Patients who experience dizziness, vertigo or somnolence while taking Celecoxib should refrain from driving or operating machinery.

**4.8 Undesirable effects**

| <b>System Organ Class</b>                   | <b>Very Common</b><br>(≥1/10) | <b>Common</b><br>(≥1/100 to <1/10)   | <b>Uncommon</b><br>(≥1/1,000 to <1/100) | <b>Rare</b><br>(≥1/10,000 to <1/1,000) | <b>Very Rare</b><br>(<1/10,000)                                      | <b>Frequency Not Known</b> |
|---|-------------------------------|--|---|--|--|----------------------------|
| <b>Infections and infestations</b>          |                               | Sinusitis, upper respiratory tract infection, pharyngitis, urinary tract infection |   |  |  |                            |
| <b>Blood and lymphatic system disorders</b> |                               |  | Anaemia                                 | Leukopenia, thrombocytopenia           | Pancytopenia <sup>4</sup>  |                            |
| <b>Immune system disorders</b>              |                               | Hypersensitivity   |   |  | Anaphylactic shock <sup>4</sup> , anaphylactic reaction <sup>4</sup> |                            |
| <b>Metabolism and nutrition disorders</b>   |                               |  | Hyperkalaemia                           |  |  |                            |
| <b>Psychiatric disorders</b>                |                               | Insomnia   | Anxiety, depression,                    | Confusional state,                     |  |                            |

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|------------------------------------|---|--|---|---|--|--|
|                                    |   |  | fatigue   | hallucinations <sup>4</sup>                             |  |  |
| <b>Nervous system disorders</b>    |   | Dizziness, hypertonia, headache <sup>4</sup> | Cerebral infarction <sup>1</sup> , paraesthesia, somnolence | Ataxia, dysgeusia                                       | Haemorrhage intracranial (including fatal intracranial haemorrhage) <sup>4</sup> , meningitis aseptic <sup>4</sup> , epilepsy (including aggravated epilepsy) <sup>4</sup> , ageusia <sup>4</sup> , anosmia <sup>4</sup> |  |
| <b>Eye disorders</b>               |   |  | Vision blurred, conjunctivitis <sup>4</sup>                 | Eye haemorrhage <sup>4</sup>                            | Retinal artery occlusion <sup>4</sup> , retinal vein occlusion <sup>4</sup>  |  |
| <b>Ear and labyrinth disorders</b> |   |  | Tinnitus, hypoacusis <sup>1</sup>                           |   |  |  |
| <b>Cardiac disorders</b>           |   | Myocardial infarction <sup>1</sup>           | Cardiac failure, palpitations, tachycardia                  | Arrhythmia <sup>4</sup>                                 |  |  |
| <b>Vascular disorders</b>          | Hypertension <sup>1</sup> (including aggravated hypertension) |  |   | Pulmonary embolism <sup>4</sup> , flushing <sup>4</sup> | Vasculitis <sup>4</sup>  |  |
| <b>Respiratory, thoracic,</b>      |   | Rhinitis, cough,                             | Bronchospasm <sup>4</sup>                                   | Pneumonitis <sup>4</sup>                                |  |  |

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|                                   |  |  |   |  |   |  |
|-----------------------------------|--|--|---|--|---|--|
| <b>and mediastinal disorders</b>  |  | dyspnoea <sup>1</sup>  |   |  |   |  |
| <b>Gastrointestinal disorders</b> |  | Nausea <sup>4</sup> , abdominal pain, diarrhoea, dyspepsia, flatulence, vomiting <sup>1</sup> , dysphagia <sup>1</sup> | Constipation, gastritis, stomatitis, gastrointestinal inflammation (including aggravation of gastrointestinal inflammation), eructation | Gastro-intestinal haemorrhage <sup>4</sup> , duodenal ulcer, gastric ulcer, oesophageal ulcer, intestinal ulcer, and large intestinal ulcer, intestinal perforation; oesophagitis, melaena; pancreatitis, colitis <sup>4</sup> |   |  |
| <b>Hepatobiliary disorders</b>    |  |  | Hepatic function abnormal, hepatic enzyme increased (including increased SGOT and SGPT)   | Hepatitis <sup>4</sup>   | Hepatic failure <sup>4</sup> (sometimes fatal or requiring liver transplant), hepatitis fulminant <sup>4</sup> (some with fatal outcome), hepatic necrosis <sup>4</sup> , cholestasis <sup>4</sup> , hepatitis cholestatic <sup>4</sup> , jaundice <sup>4</sup> |  |
| <b>Skin and</b>                   |  | Rash,  | Urticaria,  | Angioede   | Dermatiti   |  |

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| <b>subcutaneous tissue disorders</b>                   |  | pruritus (includes pruritus generalised) | ecchymosis <sup>4</sup>                          | alopecia, <sup>4</sup> photosensitivity                       | exfoliative <sup>4</sup> , erythema multiforme <sup>4</sup> , Stevens-Johnson syndrome <sup>4</sup> , toxic epidermal necrolysis <sup>4</sup> , drug reaction with eosinophilia and systemic symptoms (DRESS) <sup>4</sup> , acute generalised exanthematous pustulosis (AGEP) <sup>4</sup> , dermatitis bullous <sup>4</sup> |  |
| <b>Musculoskeletal and connective tissue disorders</b> |  | Arthralgia <sup>4</sup>                  | Muscle spasms (leg cramps)                       |   | Myositis <sup>4</sup>   |  |
| <b>Renal and urinary disorders</b>                     |  |  | Blood creatinine increased, blood urea increased | Renal failure acute <sup>4</sup> , hyponatraemia <sup>4</sup> | Tubulointerstitial nephritis <sup>4</sup> , nephrotic syndrome <sup>4</sup> , glomerulonephritis minimal  |  |

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|---|--|--|--------------------------------------|---------------------------------|---------------------|--|
|   |  |  |                                      |                                 | lesion <sup>4</sup> |  |
| <b>Reproductive system and breast disorders</b>   |  |  |                                      | Menstrual disorder <sup>4</sup> |                     | Infertility female (female fertility decreased) <sup>3</sup> |
| <b>General disorders and administrative site conditions</b>   |  | Influenza-like illness, Oedema peripheral/ fluid retention | Face oedema, chest pain <sup>4</sup> |                                 |                     |  |
| <b>Injury, poisoning and procedural complications</b>   |  | Injury (accidental injury)                                 |                                      |                                 |                     |  |
| <p><sup>1</sup> Adverse drug reactions that occurred in polyp prevention trials, representing subjects treated with celecoxib 400 mg daily in 2 clinical trials of duration up to 3 years (the APC and PreSAP trials). The adverse drug reactions listed above for the polyp prevention trials are only those that have been previously recognized in the post-marketing surveillance experience, or have occurred more frequently than in the arthritis trials.</p> <p><sup>2</sup> Furthermore, the following <i>previously unknown</i> adverse reactions occurred in polyp prevention trials, representing subjects treated with celecoxib 400 mg daily in 2 clinical trials of duration up to 3 years (the APC and PreSAP trials):</p> <p><b>Common:</b> angina pectoris, irritable bowel syndrome, nephrolithiasis, blood creatinine increased, benign prostatic hyperplasia, weight increased. <b>Uncommon:</b> helicobacter infection, herpes zoster, erysipelas, bronchopneumonia, labyrinthitis, gingival infection, lipoma, vitreous floaters, conjunctival haemorrhage, deep vein thrombosis, dysphonia, haemorrhoidal haemorrhage, frequent bowel movements, mouth ulceration, allergic dermatitis, ganglion, nocturia, vaginal haemorrhage, breast tenderness, lower limb fracture, blood sodium increased.</p> <p><sup>3</sup> Women intending to become pregnant are excluded from all trials, thus consultation of the trial database for the frequency of this event was not reasonable.</p> <p><sup>4</sup> Frequencies are based on cumulative meta-analysis with pooling of trials representing exposure in</p> |  |  |                                      |                                 |                     |  |

#### 4.9 Overdose

There is no clinical experience of overdose. Single doses up to 1200 mg and multiple doses up to 1200 mg twice daily have been administered to healthy

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subjects for nine days without clinically significant adverse effects. In the event of suspected overdose, appropriate supportive medical care should be provided e.g. by eliminating the gastric contents, clinical supervision and, if necessary, the institution of symptomatic treatment. Dialysis is unlikely to be an efficient method of drug removal due to high protein binding.

## 5. Pharmacological Properties

### 5.1 Pharmacodynamic properties

Celecoxib has analgesic, anti-inflammatory, and antipyretic properties.

The mechanism of action of Celecoxib is believed to be due to inhibition of prostaglandin synthesis, primarily via inhibition of cyclooxygenase-2 (COX-2).

Celecoxib is a potent inhibitor of prostaglandin synthesis in vitro. Celecoxib concentrations reached during therapy have produced in vivo effects. Prostaglandins sensitize afferent nerves and potentiate the action of bradykinin in inducing pain in animal models. Prostaglandins are mediators of inflammation. Since celecoxib is an inhibitor of prostaglandin synthesis, its mode of action may be due to a decrease of prostaglandins in peripheral tissues.

### 5.2 Pharmacokinetic properties

*Absorption:* Peak plasma levels of celecoxib occur approximately 3 hrs after an oral dose. Under fasting conditions, both peak plasma levels ( $C_{max}$ ) and area under the curve (AUC) are roughly dose-proportional up to 200 mg BID; at higher doses there are less than proportional increases in  $C_{max}$  and AUC. With multiple dosing, steady-state conditions are reached on or before Day 5.

| Summary of Single Dose (200 mg) Disposition Kinetics of Celecoxib in Healthy Subjects |                |                          |          |            |
|---|----------------|--------------------------|----------|------------|
| Mean (%CV) PK Parameter Values  |                |                          |          |            |
| $C_{max}$ , ng/mL   | $T_{max}$ , hr | Effective $t_{1/2}$ , hr | Vss/F, L | CL/F, L/hr |
| 705 (38)  | 2.8 (37)       | 11.2 (31)                | 429 (34) | 27.7 (28)  |

*Food Effects:* When Celecoxib capsules were taken with a high fat meal, peak plasma levels were delayed for about 1 to 2 hours with an increase in total absorption (AUC) of 10% to 20%. Under fasting conditions, at doses above 200

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mg, there is less than a proportional increase in  $C_{max}$  and AUC, which is thought to be due to the low solubility of the drug in aqueous media.

*Distribution:* In healthy subjects, celecoxib is highly protein bound (~97%) within the clinical dose range. *In vitro* studies indicate that celecoxib binds primarily to albumin and, to a lesser extent,  $\alpha$ 1-acid glycoprotein. The apparent volume of distribution at steady state ( $V_{ss}/F$ ) is approximately 400 L, suggesting extensive distribution into the tissues. Celecoxib is not preferentially bound to red blood cells.

*Metabolism:* Celecoxib metabolism is primarily mediated via CYP2C9. Three metabolites, a primary alcohol, the corresponding carboxylic acid and its glucuronide conjugate, have been identified in human plasma. These metabolites are inactive as COX-1 or COX-2 inhibitors.

*Excretion:* Celecoxib is eliminated predominantly by hepatic metabolism with little (<3%) unchanged drug recovered in the urine and feces. Following a single oral dose of radiolabeled drug, approximately 57% of the dose was excreted in the feces and 27% was excreted into the urine. The primary metabolite in both urine and feces was the carboxylic acid metabolite (73% of dose) with low amounts of the glucuronide also appearing in the urine. It appears that the low solubility of the drug prolongs the absorption process making terminal half-life ( $t_{1/2}$ ) determinations more variable. The effective half-life is approximately 11 hours under fasted conditions. The apparent plasma clearance ( $CL/F$ ) is about 500 mL/min.

### 5.3 Preclinical safety data

Celecoxib was not carcinogenic in rats given oral doses up to 200 mg/kg for males and 10 mg/kg for females (approximately 2-to 4-fold the human exposure as measured by the  $AUC_{0-24}$  at 200 mg twice daily) or in mice given oral doses up to 25 mg/kg for males and 50 mg/kg for females (approximately equal to human exposure as measured by the  $AUC_{0-24}$  at 200 mg twice daily) for two years.

Celecoxib was not mutagenic in an Ames test and a mutation assay in Chinese hamster ovary (CHO) cells, nor clastogenic in a chromosome aberration assay in CHO cells and an *in vivo* micronucleus test in rat bone marrow.

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Celecoxib did not impair male and female fertility in rats at oral doses up to 600 mg/kg/day (approximately 11-fold human exposure at 200 mg twice daily based on the AUC<sub>0-24</sub>).

**6. Pharmaceutical Particulars**

**6.1 List of Excipients** : Lactose monohydrate , Hydroxypropyl cellulose , Crospovidone Type A , Povidone (PVPK-30) , Sodium lauryl sulfate , Magnesium stearate , Size '2' Capsules, Hard Gelatin Capsule shell

**6.2 Incompatibilities : Not Applicable**

**6.3 Shelf life**

**4 years**

**6.4 Special precautions for storage**

Store below 30°C in a dry place.

Protect from light.

**6.5 Nature and contents of container**

Alu-PVC/PVdC Blister pack of 10 Capsules. Such 3 blisters packed in a carton along with pack insert

Following minimum batch details is coded on Container Label and Carton

Batch No., Mfg. Date and Exp. Date.

**6.6 Special Precaution for disposal**

No special requirements.

Any unused product or waste material should be disposed of in accordance with local requirements.

**7. Supplier**

**Macleods Pharmaceuticals Ltd.**

304, Atlanta Arcade, Marol Church Road,

Andheri (East), Mumbai- 400 059,

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India

Phone: +91-22-66762800

Fax: +91-22-2821 6599

E-mail: exports@macleodsphara.com

**8. WHO Reference Number (Prequalification Programme)**

**9. Date of first Prequalification/ last renewal**

**10. Date of Revision of the Text:**

**References:**

1.<http://www.rxlist.com/celebrex-drug/.htm>

2.<https://www.medicines.org.uk/emc/medicine/27362/SPC/Celebrex+200+mg+capsule/#>