Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Naproxen/Esomeprazole MSN 500 mg/20 mg modified-release tablets

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each modified-release tablet contains 500 mg naproxen and 20 mg esomeprazole (as magnesium trihydrate).

For the full list of excipients, see section 6.1.

3 PHARMACEUTICAL FORM

Modified-release tablet

Yellow, oval (approximately 18.3 mm in length and 9.4 mm in width), modified-release tablet, marked with "NE2" in black on one side.

4 CLINICAL PARTICULARS

4.1 Therapeutic indications

Naproxen/Esomeprazole MSN is indicated in adults for the symptomatic treatment of osteoarthritis, rheumatoid arthritis and ankylosing spondylitis, in patients who are at risk for developing non-steroidal anti-inflammatory drug (NSAID)-associated gastric and/or duodenal ulcers and where treatment with lower doses of naproxen or of other NSAIDs is not considered sufficient.

4.2 Posology and method of administration

Posology

The recommended dose is 1 tablet (500 mg/20 mg) twice daily.

Undesirable effects of naproxen may be minimised by using the lowest effective dose for the shortest duration possible (see section 4.4). In patients not treated with a NSAID previously, a lower daily dose of naproxen or of another NSAID should be considered. For this purpose non-fixed combination products are available. When total daily dose of 1000 mg of naproxen (500 mg twice daily) is not considered appropriate, alternative treatment with lower strength of naproxen or of other NSAIDs as non-fixed combination should be utilised.

Treatment should be continued to achieve individual treatment goals, reviewed at regular intervals and discontinued if no benefit or if worsening is seen.

Due to the delayed release of naproxen from the enteric-coated formulation (3-5 hours), Naproxen/Esomeprazole MSN is not intended for rapid relief of acute pain conditions (such as dental pain). However, flares of osteoarthritis, rheumatoid arthritis and ankylosing spondylitis may be treated with Naproxen/Esomeprazole MSN.

Special populations

Renal impairment
In patients with mild to moderate renal impairment Naproxen/Esomeprazole MSN should be used cautiously and renal function should be monitored closely. A reduction in the total daily naproxen dose should be considered (see sections 4.4 and 4.5). When total daily dose of 1000 mg of naproxen (500 mg twice daily) is not considered appropriate, alternative treatment with lower strength of naproxen or of other NSAIDs as non-fixed combination should be utilised, and in addition the need for continuation of the gastroprotective treatment should be re-evaluated.

Naproxen/Esomeprazole MSN is contraindicated in patients with severe renal impairment (creatinine clearance < 30 ml/minute) because accumulation of naproxen metabolites has been seen in patients with severe renal failure and in those on dialysis (see sections 4.3 and 4.4).

Hepatic impairment
In patients with mild to moderate hepatic impairment Naproxen/Esomeprazole MSN should be used cautiously and hepatic function should be monitored closely. A reduction in the total daily naproxen dose should be considered (see sections 4.4 and 5.2). When total daily dose of 1000 mg of naproxen (500 mg twice daily) is not considered appropriate, alternative treatment with lower strength of naproxen or of other NSAIDs as non-fixed combination should be utilised, and in addition the need for continuation of the gastroprotective treatment should be re-evaluated.

Naproxen/Esomeprazole MSN is contraindicated in patients with severe hepatic impairment (see sections 4.3 and 5.2).

Elderly (> 65 years)
Older people are at an increased risk of the serious consequences of adverse reactions (see sections 4.4 and 5.2). When total daily dose of 1000 mg of naproxen (500 mg twice daily) is not considered appropriate (e.g. in older people with impaired renal function or low body weight), alternative treatment with lower strength of naproxen or of other NSAIDs as non-fixed combination should be utilised, and in addition the need for continuation of the gastroprotective treatment should be reevaluated.

Paediatric population
The safety and efficacy of naproxen/esomeprazole in children aged 0 to 18 years has not been established. No data are available.

Method of administration
Naproxen/Esomeprazole MSN must be swallowed whole with water, and not split, chewed or crushed.

It is recommended that Naproxen/Esomeprazole MSN is taken at least 30 minutes prior to food intake (see section 5.2).

4.3 Contraindications

- Hypersensitivity to the active substances or to any of the excipients listed in section 6.1 or substituted benzimidazoles.
- History of asthma, urticaria or allergic-type reactions induced by administration of acetylsalicylic acid or other NSAIDs (see section 4.4)
- Third trimester of pregnancy (see section 4.6)
- Severe hepatic impairment (e.g. Child-Pugh C)
- Severe heart failure
- Severe renal impairment
- Active peptic ulceration (see section 4.4, gastrointestinal effects *Naproxen*)
- Gastrointestinal bleeding, cerebrovascular bleeding or other bleeding disorders (see section 4.4, Haematological effects)
- Naproxen/Esomeprazole MSN must not be used concomitantly with atazanavir and nelfinavir (see sections 4.4 and 4.5).

4.4 Special warnings and precautions for use

General
The combination of Naproxen/Esomeprazole MSN and NSAIDs including cyclooxygenase-2 selective inhibitors should be avoided because of the cumulative risks of inducing serious NSAID-related adverse events. Naproxen/Esomeprazole MSN can be used with low dose acetylsalicylic acid (see also section 4.5).

Undesirable effects may be minimised by using the lowest effective dose for the shortest duration necessary to control symptoms (see section 4.2, and GI and cardiovascular risks below).

To prevent overtreatment, the prescriber should assess at clinically meaningful intervals based on the individual risks and depending on the characteristics and the severity of the treated underlying disease, whether sufficient pain control is possible with lower doses of NSAIDs as non-fixed combinations.

When total daily dose of 1000 mg of naproxen (500 mg twice daily) is not considered appropriate, alternative treatment with lower strength of naproxen or of other NSAIDs as non-fixed combination should be utilised, and in addition the need for continuation of the gastroprotective treatment should be re-evaluated.

Risk-factors to develop NSAID related gastro-intestinal complications include high age, concomitant use of anticoagulants, corticosteroids, other NSAIDs including low-dose acetylsalicylic acid, debilitating cardiovascular disease, *Helicobacter pylori* infection, and a history of gastric and/or duodenal ulcers and upper gastrointestinal bleeding.

In patients with the following conditions, naproxen should only be used after a rigorous benefit-risk ratio:

- Inducible porphyries
- Systemic lupus erythematosus and mixed connective tissue disease, as rare cases of aseptic meningitis have been described in these patients.

Patients on long-term treatment (particularly those treated for more than a year) should be kept under regular surveillance.

Elderly
Naproxen: Older people have an increased frequency of adverse reactions especially gastro-intestinal bleeding, and perforation, which may be fatal (see sections 4.2 and 5.2). The esomeprazole component of Naproxen/Esomeprazole MSN decreased the incidence of ulcers in older people.

Gastrointestinal effects
Naproxen: GI bleeding, ulceration or perforation, which can be fatal, has been reported with all NSAIDs at anytime during treatment, with or without warning symptoms or a previous history of serious GI events.

The risk of GI bleeding, ulceration or perforation with NSAIDs is higher with increasing NSAID doses, in patients with a history of ulcer, particularly if complicated with haemorrhage or perforation (see section 4.3), and in older people. These patients should begin treatment on the lowest dose available. Combination therapy with protective agents (e.g. misoprostol or proton pump inhibitors) should be considered for these patients, and also for patients requiring concomitant low dose acetylsalicylic acid, or other drugs likely to increase gastrointestinal risk (see below and 4.5). The esomeprazole component of Naproxen/Esomeprazole MSN is a proton pump inhibitor.
Patients with a history of GI toxicity, particularly older people, should report any unusual abdominal symptoms (especially GI bleeding) particularly in the initial stages of treatment.

Caution should be advised in patients receiving NSAIDs with concomitant medications which could increase the risk of ulceration or bleeding, such as oral corticosteroids, anticoagulants such as warfarin, selective serotonin-reuptake inhibitors or anti-platelet agents such as acetylsalicylic acid (for information on use of Naproxen/Esomeprazole MSN with low-dose acetylsalicylic acid, see section 4.5).

Ulcer complications such as bleeding, perforation and obstruction were not studied in the naproxen/esomeprazole trials.

When GI bleeding or ulceration occurs in patients receiving Naproxen/Esomeprazole MSN, the treatment should be withdrawn (see section 4.3).

NSAIDs should be given with care to patients with a history of gastrointestinal disease (ulcerative colitis, Crohn's disease) as these conditions may be exacerbated (see section 4.8 – Undesirable effects).

Esomeprazole: In the presence of any alarm symptom (e.g. significant unintentional weight loss, recurrent vomiting, dysphagia, haematemesis or melaena) and when gastric ulcer is suspected or present, malignancy should be excluded, as treatment with esomeprazole magnesium may alleviate symptoms and delay diagnosis.

Dyspepsia could still occur despite the addition of esomeprazole to the combination tablet (see section 5.1).

Treatment with proton pump inhibitors may lead to slightly increased risk of gastrointestinal infections such as *Salmonella* and *Campylobacter* (see section 5.1).

Esomeprazole, as all acid-blocking medicines, might reduce the absorption of vitamin B_{12} (cyanocobalamin) due to hypo- or achlorhydria. This should be considered in patients with reduced body stores or risk factors of reduced vitamin B_{12} absorption on long-term therapy.

Cardiovascular and cerebrovascular effects
Naproxen: Appropriate monitoring and advice are required for patients with a history of hypertension and/or mild to moderate congestive heart failure as fluid retention and oedema have been reported in association with NSAID therapy.

Clinical trial and epidemiological data suggest that use of coxibs and some NSAIDs (particularly at high doses and in long-term treatment) may be associated with a small increased risk of arterial thrombotic events (e.g. myocardial infarction or stroke). Although data suggest that the use of naproxen (1000 mg daily) may be associated with a lower risk, some risk cannot be excluded.

Patients with uncontrolled hypertension, congestive heart failure, established ischaemic heart disease, peripheral arterial disease, and/or cerebrovascular disease should only be treated with naproxen after careful consideration. Similar consideration should be made before initiating longer-term treatment of patients with risk factors for cardiovascular events (e.g. hypertension, hyperlipidaemia, diabetes mellitus, smoking).

Renal effects
Naproxen: Long-term administration of NSAIDs has resulted in renal papillary necrosis and other renal injury. Renal toxicity has also been seen in patients in whom renal prostaglandins have a compensatory role in the maintenance of renal perfusion. In these patients, administration of a NSAID may cause a dose-dependent reduction in prostaglandin formation and, secondarily, in renal blood flow, which may precipitate overt renal decompensation. Patients at greatest risk of this reaction are those with impaired renal function, hypovolemia, heart failure, liver dysfunction, salt depletion, those taking diuretics, angiotensin converting enzyme (ACE) inhibitors, or angiotensin II receptor antagonists and older people. Discontinuation of NSAID therapy is usually followed by recovery to the pretreatment state (see also below, and sections 4.2 and 4.5).

Acute tubulointerstitial nephritis (TIN) has been observed in patients taking esomeprazole and naproxen containing products and may occur at any point during Naproxen/Esomeprazole MSN therapy (see section 4.8). Acute tubulointerstitial nephritis can progress to renal failure.

Naproxen/Esomeprazole MSN should be discontinued in case of suspected TIN, and appropriate treatment should be promptly initiated.

Use in patients with renal impairment
As naproxen and its metabolites are eliminated to a large extent (95%) by urinary excretion via glomerular filtration, it should be used with great caution in patients with impaired renal function and the monitoring of serum creatinine and/or creatinine clearance is advised in these patients. Naproxen/Esomeprazole MSN is contraindicated in patients having a baseline creatinine clearance of less than 30 ml/minute (see section 4.3).

Haemodialysis does not decrease the plasma concentration of naproxen because of the high degree of protein binding.

Certain patients, specifically those whose renal blood flow is compromised, because of extracellular volume depletion, cirrhosis of the liver, sodium restriction, congestive heart failure, and pre-existing renal disease, should have renal function assessed before and during Naproxen/Esomeprazole MSN therapy. Some older patients in whom impaired renal function may be expected, as well as patients using diuretics, ACE-inhibitors or angiotensin II receptor antagonists also fall within this category. A reduction in daily dosage should be considered to avoid the possibility of excessive accumulation of naproxen metabolites in these patients.

Hepatic effects
Borderline elevations of one or more liver tests may occur in patients taking NSAIDs. Hepatic abnormalities may be the result of hypersensitivity rather than direct toxicity. Rare cases of severe hepatic reactions, including jaundice and fatal fulminant hepatitis, liver necrosis and hepatic failure, some of them with fatal outcomes have been reported.

Hepatorenal syndrome
The use of NSAIDs may be associated with acute renal failure in patients with severe hepato-cirrhosis.
These patients frequently also have concomitant coagulopathy related to inadequate synthesis of clotting factors. Antiplatelet effects associated with naproxen could further increase risk of severe bleeding in these patients

Haematological effects

Naproxen: Patients who have coagulation disorders or are receiving drug therapy that interferes with haemostasis should be carefully observed if naproxen-containing products are administered.

Patients at high risk of bleeding and those on full anti-coagulation therapy (e.g. dicoumarol derivates) may be at increased risk of bleeding if given naproxen-containing products concurrently (see section 4.5).

Naproxen decreases platelet aggregation and prolongs bleeding time. This effect should be kept in mind when bleeding times are determined.

When active and clinically significant bleeding from any source occurs in patients receiving Naproxen/Esomeprazole MSN, the treatment should be withdrawn.

Eye effects

Naproxen: Because of adverse eye findings in animal studies with NSAIDs, it is recommended that an ophthalmic examination be carried out if any change or disturbance in vision occurs.

Dermatological effects

Naproxen: 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 NSAIDs (see section 4.8). Patients appear to be at highest risk of these reactions early in the course of therapy, the onset of the reaction occurring within the first month of treatment in the majority of cases. Drug reaction with eosinophilia and systemic symptoms (DRESS) has been reported in patients taking NSAIDs. Naproxen/Esomeprazole MSN should be discontinued at the first appearance of skin rash, mucosal lesions, or any other sign of hypersensitivity.

*Esomeprazol*e: Proton pump inhibitors are associated with very infrequent cases of subacute cutaneous lupus erythematosus (SCLE). If lesions occur, especially in sun-exposed areas of the skin, and if accompanied by arthralgia, the patient should seek medical help promptly and the health care professional should consider stopping Naproxen/Esomeprazole MSN. SCLE after previous treatment with a proton pump inhibitor may increase the risk of SCLE with other proton pump inhibitors.

Severe cutaneous adverse reactions (SCARs)

*Esomeprazol*e: Severe cutaneous adverse reactions (SCARs) such as erythema multiforme (EM), Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), drug reaction with eosinophilia and systemic symptoms (DRESS) which can be life-threatening or fatal, have been reported very rarely in association with esomeprazole treatment.

Patients should be advised of the signs and symptoms of the severe skin reaction EM/SJS/TEN/DRESS and should seek medical advice from their physician immediately when observing any indicative signs or symptoms. Esomeprazole should be discontinued immediately upon signs and symptoms of severe skin reactions and additional medical care/close monitoring should be provided as needed. Re-challenge should not be undertaken in patients with EM/SJS/TEN/DRESS.

Anaphylactic (anaphylactoid) reactions

Naproxen: Hypersensitivity reactions may occur in susceptible individuals. Anaphylactic (anaphylactoid) reactions may occur both in patients with and without a history of hypersensitivity or exposure to acetylsalicylic acid, other NSAIDs or naproxen-containing products. They may also occur in individuals with a history of angio-oedema, bronchospastic reactivity (e.g. asthma), rhinitis and nasal polyps.

Pre-existing asthma

Naproxen: The use of acetylsalicylic acid in patients with acetylsalicylic acid-sensitive asthma has been associated with severe bronchospasm, which can be fatal. Since cross reactivity, including bronchospasm, between acetylsalicylic acid and other NSAIDs has been reported in such acetylsalicylic acid-sensitive patients, Naproxen/Esomeprazole MSN should not be administered to patients with this form of acetylsalicylic acid sensitivity (see section 4.3) and should be used with caution in patients with pre-existing asthma.

Inflammation

Naproxen: The anti-pyretic and anti-inflammatory activities of naproxen may reduce fever and other signs of inflammation, thereby diminishing their utility as diagnostic signs.

Female fertility

The use of Naproxen/Esomeprazole MSN, as with any drug known to inhibit cyclooxygenase / prostaglandin synthesis, 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 Naproxen/Esomeprazole MSN should be considered (see section 4.6).

Combination with other medicinal products:
Co-administration of atazanavir with proton pump inhibitors is not recommended (see section 4.5). If the combination of atazanavir with a proton pump inhibitor is judged unavoidable, close clinical monitoring (e.g. virus loading) is recommended in combination with an increase in the dose of atazanavir to 400 mg with 100mg of ritonavir; esomeprazole 20 mg should not be exceeded and therefore Naproxen/Esomeprazole MSN must not be used concomitantly with atazanavir (see section 4.3).

Esomeprazole is a CYP2C19 inhibitor. When starting or ending treatment with esomeprazole, the potential for interactions with drugs metabolised through CYP2C19 should be considered. An interaction is observed between clopidogrel and esomeprazole (see section 4.5). The clinical relevance of this interaction is uncertain. As a precaution, concomitant use of esomeprazole and clopidogrel should be discouraged.

Hypomagnesaemia
Severe hypomagnesaemia has been reported in patients treated with proton pump inhibitors (PPIs) like esomeprazole for at least three months, and in most cases for a year. Serious manifestations of hypomagnesaemia such as fatigue, tetany, delirium, convulsions, dizziness and ventricular arrhythmia can occur but they may begin insidiously and be overlooked. In most affected patients, hypomagnesaemia improved after magnesium replacement and discontinuation of the PPI. For patients expected to be on prolonged treatment or who take PPIs with digoxin or drugs that may cause hypomagnesaemia (e.g. diuretics), healthcare professionals should consider measuring magnesium levels before starting PPI treatment and periodically during treatment.

Bone fracture
Proton pump inhibitors, especially if used in high doses and over long durations (> 1 year), may modestly increase the risk of hip, wrist and spine fracture, predominantly in older people or in presence of other recognised risk factors. Observational studies suggest that proton pump inhibitors may increase the overall risk of fracture by 10-40%. Some of this increase may be due to other risk factors. Patients at risk of osteoporosis should receive care according to current clinical guidelines and they should have an adequate intake of vitamin D and calcium.

Interference with laboratory tests
Increased Chromogranin A (CgA) level may interfere with investigations for neuroendocrine tumours. To avoid this interference, Naproxen/Esomeprazole MSN treatment should be stopped for at least 5 days before CgA measurements (see section 5.1). If CgA and gastrin levels have not returned to reference range after initial measurement, measurements should be repeated 14 days after cessation of proton pump inhibitor treatment.

Naproxen/Esomeprazole MSN contains sodium
This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodiumfree'.

4.5 Interaction with other medicinal products and other forms of interaction

Contraindications of concomitant use (see section 4.3)
Antiretroviral agents
Omeprazole, the racemate of R+S omeprazole (esomeprazole), has been reported to interact with some antiretroviral drugs. The clinical importance and the mechanisms behind these interactions are not always known. Increased gastric pH during omeprazole treatment may change the absorption of the antiretroviral drug. Other possible interaction mechanisms are via CYP2C19. For some antiretroviral drugs, such as atazanavir and nelfinavir, decreased serum levels have been reported when given together with omeprazole. Co-administration of omeprazole (40 mg once daily) with atazanavir 300 mg/ritonavir 100 mg to healthy volunteers resulted in a substantial reduction in atazanavir exposure (approximately 75% decrease in AUC, C_{max} and C_{min}). Increasing the atazanavir dose to 400 mg did not compensate for the impact of omeprazole on atazanavir exposure. Coadministration of omeprazole (40 mg qd) reduced mean nelfinavir AUC, C_{max} and C_{min} by 36–39% and mean AUC, C_{max} and C_{min} for the pharmacologically active metabolite M8 was reduced by 75- 92%.

For other antiretroviral drugs, such as saquinavir, increased serum levels have been reported. There are also some antiretroviral drugs of which unchanged serum levels have been reported when given with omeprazole.
No interaction study has been performed with naproxen/esomeprazole and atazanavir. However, due to the similar pharmacodynamic and pharmacokinetic properties of omeprazole and esomeprazole, the concomitant use of atazanavir and

nelfinavir with esomeprazole is not recommended and concomitant administration with Naproxen/Esomeprazole MSN is contraindicated (see section 4.3).

Concomitant use with precaution

Other analgesics including cyclooxygenase-2 selective inhibitors

Concomitant use of two or more NSAIDs should be avoided as this may increase the risk of adverse effects, especially gastrointestinal ulcers and bleeding. The concomitant use of Naproxen/Esomeprazole MSN with other NSAIDs, except for low-dose acetylsalicylic acid (≤ 325 mg/day), is not recommended (see section 4.4).

Acetylsalicylic acid

Naproxen/Esomeprazole MSN can be administered with low-dose acetylsalicylic acid (≤325 mg/day) therapy. In clinical trials, patients taking naproxen/esomeprazole in combination with low-dose acetylsalicylic acid did not have an increased occurrence of gastric ulcers compared to patients taking naproxen/esomeprazole alone (see section 5.1). However, the concurrent use of acetylsalicylic acid and Naproxen/Esomeprazole MSN may still increase the risk of serious adverse events (see sections 4.4 and 4.8).

Clinical pharmacodynamic data suggest that concomitant naproxen usage for more than one day consecutively may inhibit the effect of low-dose acetylsalicylic acid on platelet activity and this inhibition may persist for up to several days after stopping naproxen therapy. The clinical relevance of this interaction is not known.

Tacrolimus

As with all NSAIDs, there is a possible risk of nephrotoxicity when naproxen is co-administered with tacrolimus. Concomitant administration of esomeprazole has been reported to increase the serum levels of tacrolimus. During treatment with Naproxen/Esomeprazole MSN, a reinforced monitoring of tacrolimus concentrations as well as renal function (creatinine clearance) should be performed, and dosage of tacrolimus adjusted if needed.

Ciclosporin

As with all NSAIDs, caution is advised when ciclosporin is co-administered because of the increased risk of nephrotoxicity.

Diuretics

Clinical studies, as well as postmarketing observations, have shown that NSAIDs can reduce the natriuretic effect of furosemide and thiazides in some patients. This response has been attributed to inhibition of renal prostaglandin synthesis. During concomitant therapy with NSAIDs, the patient should be observed closely for signs of renal failure, as well as to assure diuretic efficacy (see section 4.4).

Selective Serotonin Reuptake Inhibitors (SSRIs)

Concomitant use of NSAIDs, including COX-2 selective inhibitors, and SSRIs increases the risk of gastrointestinal bleeding (see section 4.4).

Corticosteroids

There is an increased risk of gastrointestinal bleeding when corticosteroids are combined with NSAIDs including COX–2 selective inhibitors. Caution should be used when NSAIDs are administered concomitantly with corticosteroids (see section 4.4).

ACE-inhibitors/Angiotensin II receptor antagonists

Reports suggest that NSAIDs may diminish the antihypertensive effect of ACE-inhibitors and angiotensin II receptor antagonists. NSAIDs may also increase the risk of renal impairment associated with the use of ACE-inhibitors or angiotensin II receptor antagonists. The combination of NSAIDs and ACE-inhibitors or angiotensin II receptor antagonists should be given with caution in patients who are older, volume-depleted, or with impaired renal function (see section 4.4).

Digoxin

NSAIDs may increase plasma cardiac glycoside levels when co-administered with cardiac glycosides such as digoxin.

Lithium

NSAIDs have produced an elevation of plasma lithium levels and a reduction in renal lithium clearance. These effects have been attributed to inhibition of renal prostaglandin synthesis by the NSAID. Thus, when NSAIDs and lithium are administered concurrently, subjects should be observed carefully for signs of lithium toxicity.

Methotrexate

When given together with proton pump inhibitors, methotrexate levels have been reported to increase in some patients. NSAIDs have been reported to reduce the tubular secretion of methotrexate in an animal model. This may indicate that both

esomeprazole and naproxen could enhance the toxicity of methotrexate. The clinical relevance is likely to be greater in patients receiving high doses of methotrexate and in patients with renal dysfunction. Caution should be used when Naproxen/Esomeprazole MSN is administered concomitantly with methotrexate. In high-dose methotrexate administration a temporary withdrawal of Naproxen/Esomeprazole MSN is recommended.

Sulphonylureas, Hydantoins
Naproxen is highly bound to plasma albumin; it thus has a theoretical potential for interaction with other albumin-bound drugs such as sulphonylureas, and hydantoins. Patients simultaneously receiving naproxen and a hydantoin, sulphonamide or sulphonylurea should be observed for adjustment of dose if required.

Clopidogrel
Results from studies in healthy subjects have shown a pharmacokinetic (PK)/pharmacodynamic (PD) interaction between clopidogrel (300 mg loading dose/75 mg daily maintenance dose) and esomeprazole (40 mg p.o. daily) resulting in decreased exposure to the active metabolite of clopidogrel by an average of 40%, and resulting in decreased maximum inhibition of (ADP induced) platelet aggregation by an average of 14%.

In a study in healthy subjects, there was a decreased exposure by almost 40% of the active metabolite of clopidogrel when a fixed dose combination of esomeprazole 20 mg and acetylsalicylic acid 81 mg was given with clopidogrel compared to clopidogrel alone. However, the maximum levels of inhibition of (ADP induced) platelet aggregation in these subjects were the same in both groups.

No clinical studies on the interaction between clopidogrel and the fixed dose combination of naproxen+esomeprazole have been performed.

Inconsistent data on the clinical implications of a PK/PD interaction of esomeprazole in terms of major cardiovascular events have been reported from both observational and clinical studies. As a precaution, concomitant use of Naproxen/Esomeprazole MSN and clopidogrel should be discouraged (see section 4.4).

Anti-coagulants and thrombocyte aggregation inhibitors
NSAIDs may enhance the effects of oral anti-coagulants (e.g. warfarin, dicoumarol) heparins and thrombocyte aggregation inhibitors (see section 4.4).

Concomitant administration of 40 mg esomeprazole to warfarin-treated patients showed that, despite a slight elevation in the trough plasma concentration of the less potent R isomer of warfarin, the coagulation times were within the accepted range. However, from post marketed use cases of elevated INR of clinical significance have been reported during concomitant treatment with warfarin. Close monitoring is recommended when initiating and ending treatment with warfarin or other coumarine derivatives.

Beta receptor-blockers
Naproxen and other NSAIDs can reduce the antihypertensive effect of propranolol and other betablockers.

Probenecid
Probenecid given concurrently increases naproxen anion plasma levels and extends its plasma half-life significantly.

Drugs with gastric pH-dependent absorption
The gastric acid suppression during treatment with esomeprazole and other PPIs might decrease or increase the absorption of drugs with a gastric pH dependent absorption. Like with other drugs that decrease the intragastric acidity, the absorption of drugs, such as ketoconazole, itraconazole, posaconazole and erlotinib can decrease while the absorption of drugs such as digoxin can increase during treatment with esomeprazole. Concomitant use with posaconazole and erlotinib should be avoided. Concomitant treatment with omeprazole (20 mg daily) and digoxin in healthy subjects increased the bioavailability of digoxin by 10% (up to 30% in two out of ten subjects).

Other Information Concerning Drug Interactions
Studies evaluating concomitant administration of esomeprazole and either naproxen (non-selective NSAID) or rofecoxib (COX-2-selective NSAID) did not identify any clinically relevant interaction.

As with other NSAIDs, concomitant administration of cholestyramine can delay the absorption of naproxen.

In healthy volunteers, concomitant administration of 40 mg esomeprazole resulted in a 32% increase in area under the plasma concentration-time curve (AUC) and a 31% prolongation of elimination halflife ($t_{1/2}$) but no significant increase in peak plasma levels of cisapride. The slightly prolonged QTc interval observed after administration of cisapride alone, was not further prolonged when cisapride was given in combination with esomeprazole (see also section 4.4).
Esomeprazole has been shown to have no clinically relevant effects on the pharmacokinetics of amoxicillin and quinidine.

Esomeprazole inhibits CYP2C19, the major esomeprazole metabolising enzyme. Esomeprazole is also metabolised by CYP3A4. The following have been observed in relation to these enzymes:

- Concomitant administration of 30 mg esomeprazole resulted in a 45% decrease in clearance of the CYP2C19 substrate diazepam. This interaction is unlikely to be of clinical relevance.
- Concomitant administration of 40 mg esomeprazole resulted in a 13% increase in trough plasma levels of phenytoin in epileptic patients.
- Concomitant administration of esomeprazole and a combined inhibitor of CYP2C19 and CYP3A4, such as voriconazole, may result in more than doubling of the esomeprazole exposure.
- Concomitant administration of esomeprazole and a CYP3A4 inhibitor, clarithromycin (500 mg twice daily), resulted in a doubling of the exposure (AUC) to esomeprazole.

Dose adjustment of esomeprazole is not required in any of these cases.

Drugs known to induce CYP2C19 or CYP3A4 or both (such as rifampicin and St. John's wort) may lead to decreased esomeprazole serum levels by increasing the esomeprazole metabolism.

Omeprazole as well as esomeprazole act as inhibitors of CYP 2C19. Omeprazole, given in doses of 40 mg to healthy subjects in a cross-over study, increased C_{max} and AUC for cilostazol by 18% and 26% respectively, and one of its active metabolites by 29% and 69% respectively.

Animal data indicate that NSAIDs can increase the risk of convulsions associated with quinolone antibiotics. Patients taking quinolones may have an increased risk of developing convulsions.

Drug/Laboratory Test Interaction
Naproxen may decrease platelet aggregation and prolong bleeding time. This effect should be kept in mind when bleeding times are determined.

The administration of naproxen may result in increased urinary values for 17-ketogenic steroids because of an interaction between the drug and/or its metabolites with m-di-nitrobenzene used in this assay. Although 17-hydroxy-corticosteroid measurements (Porter-Silber test) do not appear to be artifactually altered, it is suggested that therapy with naproxen be temporarily discontinued 72 hours before adrenal function tests are performed if the Porter-Silber test is to be used.

Naproxen may interfere with some urinary assays of 5-hydroxy indoleacetic acid (5HIAA).

4.6 Fertility, pregnancy and lactation

Pregnancy
Naproxen:
Inhibition of prostaglandin synthesis may adversely affect the pregnancy and/or the embryo/foetal 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-foetal lethality. In addition, increased incidences of various malformations, including cardiovascular, have been reported in animals given a prostaglandin synthesis inhibitor during the organogenetic period (see section 5.3).

In women attempting to conceive or during the first and second trimester of pregnancy, Naproxen/Esomeprazole MSN should not be given unless the potential benefit to the patient outweighs the potential risk to the foetus. From the 20th week of pregnancy onward, Naproxen/Esomeprazole MSN use may cause oligohydramnios resulting from foetal renal dysfunction. This may occur shortly after treatment initiation and is usually reversible upon discontinuation. In addition, there have been reports of ductus arteriosus constriction following treatment in the second trimester, most of which resolved after treatment cessation.

Therefore, if naproxen is used by a woman attempting to conceive, or during the first and second trimester of pregnancy, the dose should be kept as low and the duration of treatment as short as possible. Antenatal monitoring for oligohydramnios and ductus arteriosus constriction should be considered after exposure to Naproxen/Esomeprazole MSN for several days from gestational week 20 onward. Naproxen/Esomeprazole MSN should be discontinued if oligohydramnios or ductus arteriosus constriction are found.
During the third trimester of pregnancy, all prostaglandin synthesis inhibitors may expose the foetus to:

- cardiopulmonary toxicity (premature constriction / closure of the ductus arteriosus and pulmonary hypertension);
- renal dysfunction (see above);

the mother and the neonate, at the end of pregnancy, to:

- possible prolongation of bleeding time, an anti-aggregating effect which may occur even at very low doses.
- inhibition of uterine contractions resulting in delayed or prolonged labour.

Consequently, Naproxen/Esomeprazole MSN is contraindicated during the third trimester of pregnancy (see section 4.3).

Esomeprazole:

There are limited amount of data from the use of esomeprazole in pregnant women. With the racemic mixture omeprazole, data on a larger number of exposed pregnancies stemming from epidemiological studies indicate no malformative nor foetotoxic effects. Animal studies with esomeprazole do not indicate direct or indirect harmful effects with respect to embryonal/foetal development. Animal studies with the racemic mixture do not indicate direct or indirect harmful effects with respect to pregnancy, parturition or postnatal development.
Breast-feeding
Naproxen is excreted in low quantities in human milk. It is unknown whether esomeprazole is excreted in human milk. A published case report on the racemic mixture omeprazole indicated excretion of low quantities in the human breast milk (weight adjusted dose < 7%). Naproxen/Esomeprazole MSN should not be used during breastfeeding.

Fertility
The use of NSAIDs like naproxen may impair female fertility. The use of Naproxen/Esomeprazole MSN is not recommended in women attempting to conceive (see section 4.4).

4.7 Effects on ability to drive and use machines

Naproxen/esomeprazole has minor influence on the ability to drive and use machines; based on that some of the adverse effects (e.g. dizziness) reported following the use of naproxen/esomeprazole may reduce the ability to react.

4.8 Undesirable effects

Summary of safety profile
Immediate release esomeprazole has been included in the tablet formulation to decrease the incidence of gastrointestinal side effects from naproxen. Naproxen/esomeprazole has been shown to significantly decrease the occurrence of gastric ulcers and NSAID associated upper gastrointestinal adverse events compared to naproxen alone (see section 5.1).

No new safety findings were identified during naproxen/esomeprazole treatment in the overall study population (n=1157) compared to the well-established safety profiles of the individual active substances naproxen and esomeprazole.

Tabulated summary of adverse reactions
Adverse reactions are classified according to frequency and System Organ Class. Frequency categories are defined according to the following convention: Very common (³ 1/10), Common (³ 1/100 to < 1/10), Uncommon (³ 1/1,000 to < 1/100), Rare (³ 1/10,000 to < 1/1,000), Very rare (< 1/10,000), Not known (cannot be estimated from the available data).

Naproxen/esomeprazole
The following adverse experiences have been reported in patients taking naproxen/esomeprazole during clinical trials

	Very Common	**Common**	**Uncommon**	**Rare**
Infectionsand infestations			infection	diverticulitis
Blood and lymphatic system disorders				eosinophilia,

				leucopenia
Immune system disorders				hypersensitivity reactions
Metabolism and nutrition disorders			appetite disorder	fluid retention, hyperkalaemia, hyperuricaemia
Psychiatric disorders			anxiety, depression, insomnia	confusion, dream abnormalities
Nervous system disorders		dizziness, headache, taste disturbance	paraesthesia, syncope	somnolence, tremor
Ear and labyrinth disorders			tinnitus, vertigo	
Cardiac disorders			arrhythmia, palpitations	myocardial infarction, tachycardia
Vascular disorders		hypertension		
Respiratory, thoracicand mediastinal disorders			asthma, bronchospasm, dyspnea	
Gastrointestinal disorders	dyspepsia	abdominal pain, constipation, diarrhoea, esophagitis, flatulence, gastric/duodenal ulcers*, gastritis, nausea, vomiting	dry mouth, eructation, gastrointestinal bleeding, stomatitis	glossitis, hematemesis, rectal bleeding
Skin and subcutaneous tissuedisorders		skin rashes	dermatitis, hyperhidrosis, pruritus, urticaria	alopecia, ecchymoses,
Musculoskeletal and connective tissue disorders		arthralgia	myalgia	
Renalandurinary disorders				proteinuria, renal failure
Reproductive systemandbreast disorders				menstrual disorder
General disorders andadministrationsite disorders		oedema	asthenia, fatigue, pyrexia	
Investigations			abnormal liver function tests, raised serum creatinine	

*as detected by scheduled routine endoscopy

Naproxen

The following adverse experiences have been reported in patients taking naproxen during clinical trials and through postmarketing reports.

	Common	**Uncommon/Rare**
Infectionsandinfestations	diverticulitis	aseptic meningitis, infection, sepsis
Bloodandlymphatic systemdisorders		agranulocytosis, aplastic anemia, eosinophilia, granulocytopenia, hemolytic anemia, leucopenia, lymphadenopathy, pancytopenia, thrombocytopenia
Immunesystemdisorders		anaphylactic reactions, anaphylactoid reactions, hypersensitivity reactions
Metabolismandnutrition		appetite disorder, fluid retention, hyperglycemia, hyperkalemia,

disorders		hyperuricemia, hypoglycemia, weight changes
Psychiatricdisorders	depression, insomnia	agitation, anxiety, confusion, dream abnormalities, hallucinations, nervousness
Nervoussystemdisorders	dizziness, drowsiness, headache, lightheadedness, vertigo	cognitive dysfunction, coma, convulsions, inability to concentrate, optic neuritis, paresthesia, syncope, tremor
Eyedisorders	visual disturbances	blurred vision, conjunctivitis, corneal opacity, papilloedema, papillitis
Earandlabyrinth disorders	tinnitus, hearing disturbances	hearing impairment
Cardiacdisorders	palpitations	arrhythmia, congestive heart failure, myocardial infarction, tachycardia
Vasculardisorders		hypertension, hypotension, vasculitis
Respiratory,thoracicand mediastinal disorders	dyspnea	asthma, bronchospasm, eosinophilic pneumonitis, pneumonia, pulmonary edema, respiratory depression
Gastrointestinaldisorders	dyspepsia, abdominal pain, nausea, vomiting diarrhea, constipation, heartburn, peptic ulcers, stomatitis	dry mouth, esophagitis, gastric ulcers, gastritis, glossitis, eructation, flatulence, gastric/duodenal ulcers, gastrointestinal bleeding and/or perforation, melena, hematemesis, pancreatitis, colitis, exacerbation of inflammatory bowel disease (ulcerative colitis, Crohn's disease), nonpeptic gastrointestinal ulceration, rectal bleeding, ulcerative stomatitis
Hepatobiliarydisorders		cholestasis, hepatitis, jaundice, liver failure
Skinandsubcutaneous tissue disorders	pruritus, ecchymoses, purpura, skin rashes	alopecia, exanthema, urticaria, bullous reactions including Stevens-Johnson syndrome and toxic epidermal necrolysis (TEN), erythema multiforme, erythema nodosum, fixed drug eruption, lichen planus, systemic lupus erythematosus, photosensitive dermatitis, photosensitivity reactions, including rare cases resembling porphyria cutanea tarda (pseudoporphyria), exfoliative dermatitis, angioneurotic edema, pustular reaction
Musculoskeletaland connectivetissuedisorders		muscle weakness, myalgia
Renalandurinary disorders		glomerular nephritis, hematuria, tubulointerstitial nephritis (with possible progression to renal failure), nephrotic syndrome, oliguria/polyuria, proteinuria, renal failure, renal papillary necrosis, tubular necrosis
Reproductivesystemand breast disorders		infertility, menstrual disorder
Generaldisordersand administration site disorders	fatigue, oedema, sweating, thirst	asthenia, malaise, pyrexia
Investigations		abnormal liver function tests, increased bleeding time, raised serum creatinine

Esomeprazole

The following adverse drug reactions have been identified or suspected in the clinical trials programme for enteric-coated esomeprazole and/or from post marketing use. None were found to be dose-related.

		Common	**Uncommon**	**Rare**	**Veryrare**	**Notknown**
Bloodand lymphatic system disorders				leukopenia, thrombocytopenia	agranulocytosis, pancytopenia	
Immunesystem disorders				hypersensitivity reactions e.g. fever,		

				angioedema and anaphylactic reaction/shock		
Metabolismand nutrition disorders			peripheral oedema	hyponatraemia		hypomagne-saemia; severe hypomagne-saemia may result in hypocalcae-mia; hypomagnes aemia may also be associated with hypokalaemia.
Psychiatric disorders			insomnia	agitation, confusion, depression	aggression, hallucinations	
Nervoussystem disorders		headache	dizziness, paraesthesia, somnolence	taste disturbance		
Eyedisorders				blurred vision		
Ear and labyrinth disorders			vertigo			
Respiratory, thoracicand mediastinal disorders				bronchospasm		
	Gastrointestinal disorders	abdominal pain, diarrhoea, flatulence, nausea/ vomiting, constipa-tion fundic gland polyps (benign)	dry mouth	stomatitis, gastrointestinal candidiasis	microscopic colitis	
	Hepatobiliary disorders		increased liver enzymes	hepatitis with or without jaundice	hepatic failure, hepatic encephalopathy in patients with pre-existing liver disease	
	Skin and subcutaneous tissuedisorders		dermatitis, pruritus, urticaria, rash	alopecia, photosensitivity	erythema multiforme, Stevens-Johnson syndrome, toxic epidermal necrolysis (TEN), drug reaction with eosinophilia and systemic symptoms (DRESS)	Subacute cutaneous lupus erythematos us (see section 4.4)
	Musculoskeletal and connective		fracture of the hip, wrist	arthralgia, myalgia	muscular weakness	

	tissue disorders		or spine (see section 4.4)			
	Renaland urinary disorders				Tubulointerstitial nephritis (with possible progression to renal failure)	
	Reproductive systemand breastdisorders				gynaecomastia	
	General disorders and administration sitedisorders			malaise, increased sweating		

Descriptionofselectedadversereactions

Naproxen
Clinical trial and epidemiological data suggest that use of coxibs and some NSAIDs (particularly at high doses and in long-term treatment) may be associated with a small increased risk of arterial thrombotic events (for example myocardial infarction or stroke). Although data suggest that the use of naproxen (1000 mg daily) may be associated with a lower risk, some risk cannot be excluded (see section 4.4).

Oedema, hypertension and cardiac failure have been reported in association with NSAID treatment.

The most commonly observed adverse events are gastrointestinal in nature. Peptic ulcers, perforation or GI bleeding, sometimes fatal, particularly in older people, may occur (see section 4.4). Nausea, vomiting, diarrhoea, flatulence, constipation, dyspepsia, abdominal pain, melaena, haematemesis, ulcerative stomatitis, exacerbation of colitis and Crohn's disease (see section 4.4 - Special warnings and precautions for use) have been reported following administration. Less frequently, gastritis has been observed.

Naproxen/Esomeprazole MSN has been developed with esomeprazole to decrease the incidence of gastrointestinal side effects from naproxen and has been shown to significantly decrease the occurrence of gastric and/or duodenal ulcers and NSAID associated upper gastrointestinal adverse events compared to naproxen alone.

Reporting of suspected adverse reactions
Reporting suspected adverse reactions after authorisation 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 via HPRA Pharmacovigilance.
Website: www.hpra.ie

4.9 Overdose

There is no clinical data on overdose with naproxen/esomeprazole.

Any effects of an overdose with naproxen/esomeprazole would be expected to primarily reflect the effects of an overdose with naproxen.

Symptoms
Related to naproxen overdose
Significant naproxen overdosage may be characterized by lethargy, dizziness, drowsiness, epigastric pain, abdominal discomfort, heartburn, indigestion, nausea, transient alterations in liver function, hypoprothrombinemia, renal dysfunction, metabolic acidosis, apnea, disorientation or vomiting.

Gastrointestinal bleeding can occur. Hypertension, acute renal failure, respiratory depression, and coma may occur, but are rare. Anaphylactoid reactions have been reported with therapeutic ingestion of NSAIDs, and may occur following an overdose. A few patients have experienced convulsions, but it is not clear whether or not these were drug-related. It is not known what dose of the drug would be life-threatening.

Related to esomeprazole overdose
The symptoms described in connection with deliberate esomeprazole overdose (limited experience of doses in excess of 240 mg/day) are transient. Single doses of 80 mg esomeprazole were uneventful.

Management
Related to naproxen
Patients should be managed by symptomatic and supportive care following a NSAID overdose, particularly with respect to GI effects and renal damage. There are no specific antidotes.

Hemodialysis does not decrease the plasma concentration of naproxen because of the high degree of its protein binding. Emesis and/or activated charcoal (60 to 100 g in adults, 1 to 2 g/kg in children) and/or osmotic cathartic may be indicated in patients seen within 4 hours of ingestion with symptoms or following a large overdose. Forced diuresis, alkalinization of urine or hemoperfusion may not be useful due to high protein binding.

Related to esomeprazole
No specific antidote is known. Esomeprazole is extensively plasma protein bound and is therefore not readily dialyzable. As in any case of overdose, treatment should be symptomatic and general supportive measures should be utilised.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Pharmacotherapeutic group: naproxen and esomeprazole ATC code: M01AE52

Mechanism of action
Naproxen/Esomeprazole MSN has been developed as a sequential-delivery tablet formulation combining an immediate release esomeprazole magnesium layer and an enteric coated delayed-release naproxen core. As a result, esomeprazole is released in the stomach prior to the dissolution of naproxen in the small intestine. The enteric coating prevents naproxen release at pH levels below 5 providing protection against possible local gastric toxicity of naproxen.

Due to the delayed-release of naproxen, naproxen/esomeprazole is not intended for, and has not been studied in, acute pain.

Naproxen is a NSAID with analgesic and antipyretic properties. The mechanism of action of the naproxen anion, like that of other NSAIDs, is not completely understood but may be related to prostaglandin synthetase inhibition.

Esomeprazole is the *S*-enantiomer of omeprazole and reduces gastric acid secretion through a specific targeted mechanism of action. Esomeprazole is a weak base and is concentrated and converted to the active form in the highly acidic environment of the secretory canaliculi of the parietal cell, where it inhibits the enzyme H+K+-ATPase – the acid pump and inhibits both basal and stimulated acid secretion.

Pharmacodynamic effects
Effect on gastric acid secretion
An optimal effect (maintenance of high gastric pH) was achieved with naproxen/esomeprazole formulation containing 20 mg of esomeprazole. After 9 days of dosing twice daily with naproxen/esomeprazole, intragastric pH above 4 was maintained for a mean time of 17.1 hours (SD 3.1) in healthy volunteers. The corresponding value for esomeprazole 20 mg was 13.6 hours (SD 2.4).

Other effects related to acid inhibition
During treatment with antisecretory medicinal products, serum gastrin increases in response to the decreased acid secretion. Also, CgA increases due to decreased gastric acidity. The increased CgA level may interfere with investigations for neuroendocrine tumours. Available published evidence suggests that proton pump inhibitors should be discontinued between 5 days and 2 weeks prior to CgA measurements. This is to allow CgA levels that might be spuriously elevated following PPI treatment to return to reference range.

An increased number of enterochromaffin-like (ECL) cells possibly related to the increased serum gastrin levels, have been observed in some patients during long-term treatment with esomeprazole. The findings are considered to be of no clinical significance.

During long-term treatment with antisecretory drugs gastric glandular cysts have been reported to occur at a somewhat increased frequency. These changes are a physiological consequence of pronounced inhibition of acid secretion, are benign and appear to be reversible.

Decreased gastric acidity due to any means including proton pump inhibitors, increases gastric counts of bacteria normally present in the gastrointestinal tract. Treatment with proton pump inhibitors may lead to slightly increased risk of gastrointestinal infections such as *Salmonella* and *Campylobacter* and, in hospitalised patients, possibly also *Clostridium difficile*.

Clinical efficacy and safety
In all of the clinical studies, naproxen/esomeprazole was taken by 491 patients for 6 months and 135 for 12 months.
In two randomised, double-blind, active-controlled studies, the incidence of gastric and duodenal ulcers was significantly lower after naproxen/esomeprazole treatment compared to enteric-coated naproxen 500 mg twice daily (without esomeprazole or other PPI) during a 6-month treatment period. The participants were at risk a priori for developing NSAID-associated ulcers, due to advanced age, or prior history of gastric or duodenal ulcers. Patients who tested positive for *H pylori* were excluded from these trials.

The gastric ulcer incidences for naproxen/esomeprazole were 5.6%, and for enteric-coated naproxen 23.7% (6 month data from 2 endoscopic studies). Naproxen/esomeprazole also significantly reduced the occurrence of duodenal ulcers relative to enteric-coated naproxen (0.7 versus 5.4%) (6 month data from 2 endoscopic studies).

Naproxen/esomeprazole also significantly reduced the occurrence of pre-specified NSAID associated upper gastrointestinal adverse events compared to enteric-coated naproxen during these trials (53.3% versus 70.4%) (pooled data).

In the naproxen/esomeprazole trials, only patients at risk to develop NSAID-related gastroduodenal ulcers such as > 50 years of age or prior uncomplicated ulcer were included; concomitant users of low-dose acetylsalicylic acid (LDA) were permitted. Subgroup analyses confirmed the same trend as observed for overall population regarding efficacy of GI ulcer prevention by naproxen/esomeprazole. In users of LDA, the incidence of gastroduodenal ulcers was 4.0% (95% CI 1.1-10.0%) in the naproxen/esomeprazole group (n=99) versus 32.4% (95% CI 23.4-42.3%) in the EC Naproxen-only group (n=102). In older people > 60 years of age, the incidence of gastroduodenal ulcers was 3.3% (95% CI 1.3-6.7%) versus 30.1% (95% CI 24.0-36.9%) in the naproxen/esomeprazole group (n=212) and in the EC Naproxen-only group (n=209), respectively.

In two clinical trials, naproxen/esomeprazole had less upper abdominal discomfort over a 6-month period compared with enteric-coated naproxen as measured by dyspepsia symptoms. A significantly lower proportion of patients taking naproxen/esomeprazole prematurely discontinued the studies due to adverse events compared to patients taking enteric-coated naproxen alone (7.9% versus 12.5% respectively); 4.0% and 12.0% of discontinuations were due to upper gastric-related adverse events, including duodenal ulcers respectively).

In two 12-week studies in patients with osteoarthritis of the knee, naproxen/esomeprazole (500 mg/20 mg given twice daily) had similar improvement in pain and function, time to onset of pain relief, and discontinuation due to adverse events compared to celecoxib 200 mg once daily.

Paediatric population
The European Medicines Agency has waived the obligation to submit the results of studies with the reference medicinal product containing naproxen and esomeprazole.

5.2 Pharmacokinetic properties

Absorption
Naproxen
After single dose application the time to peak plasma concentration is achieved after 3 to 5 hours, however, food intake results in further delay up to 8 hours or more. At steady state following administration of naproxen/esomeprazole twice daily, peak plasma concentrations of naproxen are reached within a median time of 3 hours following both the morning and the evening dose.

Bioequivalence between naproxen/esomeprazole and enteric-coated naproxen, based on both area under the plasma concentration-time curve (AUC) and maximum plasma concentration (C_{max}) of naproxen, has been demonstrated.

Naproxen is rapidly and completely absorbed from the gastrointestinal tract with an *in vivo* bioavailability of 95%.

Steady-state levels of naproxen are reached in 4 to 5 days.

Esomeprazole
Following administration of naproxen/esomeprazole twice daily, esomeprazole is rapidly absorbed with peak plasma concentration reached within a median time of 0.5-0.75 hours following the morning and evening dose on both the first day of administration and at steady state. After repeated bid dosing of naproxen/esomeprazole, the C_{max} was 2-3 times higher, and the AUC 4-5 times higher, as compared to the first day of dosing. This is probably partly a result of an increased absorption due to the pharmacodynamic effect of esomeprazole with increased intragastric pH, leading to reduced acid degradation of esomeprazole in the stomach. A decrease of first pass metabolism and systemic clearance of esomeprazole with repeated dosing also contributes to the higher plasma concentrations at steady state (see Linearity/non-linearity).
Even though the AUC range at steady state was comparable for esomeprazole 20 mg once daily and naproxen/esomeprazole twice daily: 292.0 - 2279.0 ng/ml and 189.0 - 2931.0 ng/ml, respectively, the mean exposure was 60% higher (CI: 1.28 - 1.93) for naproxen/esomeprazole. This could be expected due to the different total dose of esomeprazole given as naproxen/esomeprazole or esomeprazole (40 versus 20 mg). C_{max} was 60% higher (CI: 1.27 - 2.02), for naproxen/esomeprazole, which was expected for an IR formulation.

Concomitant administration with food
Administration of naproxen/esomeprazole together with food does not affect the extent of absorption of naproxen but significantly delays the absorption by about 8 hours and decreases peak plasma concentration by about 12%.

Administration of naproxen/esomeprazole together with food does not delay the absorption of esomeprazole but significantly reduces the extent of absorption, resulting in 52% and 75% reductions of area under the plasma concentration versus time curve and peak plasma concentration, respectively.

Administration of naproxen/esomeprazole 30 minutes before food intake has only minimal or no effect on the extent and time to absorption of naproxen and has no significant effect on the rate or extent of esomeprazole absorption compared to administration under fasted conditions (see section 4.2).

Distribution
Naproxen
Naproxen has a volume of distribution of 0.16 l/kg. At therapeutic levels naproxen is greater than 99% albumin-bound. The naproxen anion has been found in the milk of lactating women at a concentration equivalent to approximately 1% of maximum naproxen concentration in plasma (see section 4.6).

Esomeprazole
The apparent volume of distribution at steady state in healthy subjects is approximately 0.22 l/kg body weight. Esomeprazole is 97% plasma protein bound.

Biotransformation
Naproxen
30% of naproxen is metabolized in the liver by the cytochrome P450 system (CYP), primarily CYP2C9, to 6–0–desmethyl naproxen. Neither the parent drug nor the metabolites induce metabolizing enzymes. Both naproxen and 6–0–desmethyl naproxen are further metabolized to their respective acylglucuronide conjugated metabolites.

Esomeprazole
Esomeprazole is completely metabolised by the CYP system. The major part of the metabolism of esomeprazole is dependent on the polymorphic CYP2C19, responsible for the formation of the] hydroxy- and desmethyl metabolites of esomeprazole. The remaining part is dependent on another specific isoform, CYP3A4, responsible for the formation of esomeprazole sulphone, the main metabolite in plasma. The major metabolites of esomeprazole have no effect on gastric acid secretion.

Elimination
Naproxen
Following administration of naproxen/esomeprazole twice daily, the mean elimination half-life for naproxen is approximately 9 hours and 15 hours following the morning and evening dose, respectively, with no change with repeated dosing.

The clearance of naproxen is 0.13 ml/min/kg. Approximately 95% of the naproxen from any dose is excreted in the urine, primarily as naproxen (< 1%), 6-0-desmethyl naproxen (< 1%) or their conjugates (66% to 92%). Small amounts, 3% or less of the administered dose, are excreted in the faeces. In patients with renal failure metabolites may accumulate (see section 4.4).

Esomeprazole
Following administration of naproxen/esomeprazole twice daily, the mean elimination half-life for esomeprazole is approximately 1 hour following both the morning and evening dose on day 1, with a slightly longer elimination half-life at steady state (1.2-1.5 hours).

Total plasma clearance of esomeprazole is about 17 l/h after a single dose and about 9 l/h after repeated administration.

Almost 80% of an oral dose of esomeprazole is excreted as metabolites in the urine, the remainder in the faeces. Less than 1% of the parent drug is found in urine.

Linearity/non-linearity
Naproxen
At doses of naproxen greater than 500 mg/day there is less than proportional increase in plasma levels due to an increase in clearance caused by saturation of plasma protein binding at higher doses (average trough C_{ss} 36.5, 49.2 and 56.4 mg/l with 500, 1000 and 1500 mg daily doses of naproxen, respectively).

Esomeprazole
The area under the plasma esomeprazole concentration-time curve increases with repeated administration of naproxen/esomeprazole. This increase is dose-dependent and results in a non-linear dose-AUC relationship after repeated administration. This time- and dose-dependency is partly due to a decrease of first pass metabolism and systemic clearance probably caused by an inhibition of the CYP2C19 enzyme by esomeprazole and/or its sulphone metabolite. An increased absorption of esomeprazole with repeated administration of naproxen/esomeprazole probably also contributes to the time-and dose-dependency (see Absorption).

Special populations
Renal impairment
The pharmacokinetics of naproxen/esomeprazole has not been determined in patients with renal impairment.

Naproxen: Naproxen pharmacokinetics has not been determined in subjects with renal impairment.

Given that naproxen, its metabolites and conjugates are primarily excreted by the kidney, the potential exists for naproxen metabolites to accumulate in the presence of renal insufficiency. Elimination of naproxen is decreased in patients with severe renal impairment. Naproxen/Esomeprazole MSN is contraindicated for use in patients with severe renal impairment (creatinine clearance < 30 ml/min) (see section 4.3).

Esomeprazole: No studies have been performed with esomeprazole in patients with decreased renal function. Since the kidney is responsible for the excretion of the metabolites of esomeprazole but not for the elimination of the parent compound, the metabolism of esomeprazole is not expected to be changed in patients with impaired renal function.

Hepatic impairment
The pharmacokinetics of naproxen/esomeprazole has not been determined in patients with impaired hepatic function.

Naproxen: The pharmacokinetics of naproxen has not been determined in subjects with hepatic impairment.

Chronic alcoholic liver disease and probably also other forms of cirrhosis reduce the total plasma concentration of naproxen, but the plasma concentration of unbound naproxen is increased. The implication of this finding for the naproxen component of Naproxen/Esomeprazole MSN dosing is unknown but it is prudent to use the lowest effective dose.

Esomeprazole: The metabolism of esomeprazole in patients with mild to moderate hepatic impairment may be impaired. The metabolic rate is decreased in patients with severe hepatic impairment resulting in a doubling of the area under the plasma concentration-time curve of esomeprazole.
Patients with severe hepatic insufficiency should not receive Naproxen/Esomeprazole MSN (see section 4.3).

Elderly
There is no specific data on the pharmacokinetics of naproxen/esomeprazole in patients over age 65.

Naproxen: Studies indicate that although total plasma concentration of naproxen is unchanged, the unbound plasma fraction of naproxen is increased in older people, however the unbound fraction is < 1% of the total naproxen concentration. The

clinical significance of this finding is unclear, although it is possible that the increase in free naproxen concentration could be associated with an increase in the rate of adverse events per a given dosage in some older patients.

Esomeprazole: The metabolism of esomeprazole is not significantly changed in older subjects (71-80 years of age).

Poor CYP2C19 metabolisers
Esomeprazole: Approximately 3% of the population lack a functional CYP2C19 enzyme and are called poor metabolisers. In these individuals the metabolism of esomeprazole is probably mainly catalysed by CYP3A4. After repeated once-daily administration of 40 mg esomeprazole, the mean area under the plasma concentration-time curve was approximately 100% higher in poor metabolisers than in subjects having a functional CYP2C19 enzyme (extensive metabolisers). Mean peak plasma concentrations were about 60% higher.

These findings have no implications for the posology of Naproxen/Esomeprazole MSN.

Gender
Esomeprazole: Following a single dose of 40 mg esomeprazole the mean area under the plasma concentration-time curve is approximately 30% higher in females than in males. No gender difference is seen after repeated once-daily administration. These findings have no implications for the posology of Naproxen/Esomeprazole MSN.

5.3 Preclinical safety data

No non-clinical data on the combination of the active substances are available. There are no known interactions between naproxen and esomeprazole that would indicate any novel or synergistic adverse pharmacology, pharmaco/ toxicokinetics, toxicity, physical/chemical interaction or tolerability issues as a result of their combination.

Naproxen
Non-clinical data reveal no special hazard for humans based on conventional studies of genotoxicity, carcinogenic potential, embryo-foetal toxicity and fertility. The principal findings at high doses in oral repeat-dose toxicity studies in animals were GI irritation and renal injury, both of which are attributed to inhibition of prostaglandin synthesis. Oral administration of naproxen to pregnant rats in the third trimester of pregnancy in peri- and postnatal studies resulted in difficult labour. This is a known effect for this class of compounds.

Environmental studies have shown that naproxen may pose a risk for the aquatic compartment (see section 6.6).

Esomeprazole
Non-clinical bridging studies reveal no particular hazard for humans based on conventional studies of repeated dose toxicity, genotoxicity, and toxicity to reproduction. Carcinogenicity studies in the rat with the racemic mixture have shown gastric ECL-cell hyperplasia and carcinoids. These gastric effects in the rat are the result of sustained, pronounced hypergastrinaemia secondary to reduced production of gastric acid and are observed after long-term treatment in the rat with inhibitors of gastric acid secretion.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Tablet core
Cellulose, microcrystalline
Croscarmellose sodium (E468)
Povidone
Silica, colloidal anhydrous
Magnesium stearate (E470b)

Coating
Hypromellose 2910
Macrogol 8000
Methacrylic acid-ethyl acrylate copolymer (1:1) dispersion 30 percent
Triethyl citrate
Titanium dioxide (E171)
Polydextrose

Polysorbate 80
Glycerol monostearate 40-55
Iron oxide yellow (E172)
Carnauba wax

Printing ink
Iron oxide black (E172)
Propylene glycol

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

18 months.

6.4 Special precautions for storage

Blister: Do not store above 25°C. Store in the original package in order to protect from moisture.

Bottle: Do not store above 25°C. Store in the original package and keep the bottle tightly closed in order to protect from moisture.

6.5 Nature and contents of container

oPA/Alu/PVC//Alu blisters containing 10, 30, or 60 modified-release tablets.
HDPE bottle with a child-resistant polypropylene screw closure and silica-gel desiccant canister containing 10, 30, or 60 modified-release tablets.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal

This medicinal product may pose a risk to the environment (see section 5.3).

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

7 MARKETING AUTHORISATION HOLDER

MSN Labs Europe Limited
Kw20a Corradino Park
Paola
PLA 3000
Malta

8 MARKETING AUTHORISATION NUMBER

PA23250/025/001

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 5th June 2026

10 DATE OF REVISION OF THE TEXT