

Summary of Product Characteristics

1 NAME OF THE MEDICINAL PRODUCT

Mirtazapine 30 mg Film-coated tablets.

2 QUALITATIVE AND QUANTITATIVE COMPOSITION

Each tablet contains Mirtazapine 30 mg.
For excipients, see 6.1.

3 PHARMACEUTICAL FORM

Film-coated tablet.

Appearance: Brownish, scored on both sides, 12.7 x 6.5mm oval, biconvex film-coated tablets, marked with an I.

4 CLINICAL PARTICULARS

4.1 Therapeutic Indications

Treatment of episodes of major depression.

4.2 Posology and method of administration

The tablets should be swallowed whole without chewing, with a sufficient amount of fluid. The tablets can be taken with or without food.

Adults: The effective daily dose is usually between 15 and 45mg; the starting dose is 15 or 30mg. Mirtazapine begins to exert its effect in general after 1-2 weeks of treatment. Treatment with an adequate dose should result in a positive response within 2-4 weeks. With an insufficient response, the dose can be increased up to the maximum dose. If there is no response within a further 2-4 weeks, then treatment should be stopped.

Elderly: The recommended dose is the same as that for adults. In elderly patient an increase in dosing should be done under close supervision to obtain a satisfactory and safe response.

Children: Since safety and efficacy of Mirtazapine 30 mg film coated tablets has not been established in children, it is not recommended to treat children with Mirtazapine 30 mg Film-coated tablets.

Renal impairment:

The clearance of Mirtazapine may be decreased in patients with severe renal insufficiency. This should be taken into consideration when prescribing Mirtazapine 30 mg Film-coated tablets to this category of patients.

Major Depressive Episode

Treatment should begin with 15mg daily. As with all antidepressant medicinal products, dosage should be reviewed and adjusted if necessary within 2 to 4 weeks of initiation of therapy and thereafter as judged clinically appropriate. Although there may be an increased potential for undesirable effects at higher doses, if after some weeks on the recommended dose insufficient response is seen some patients may benefit from having their dose increased gradually up to a maximum of 45mg a day (see section 5.1). Dosage adjustments should be made carefully on an individual patient basis, to maintain the patients at the lowest effective dose. If there is no response within 2-4 weeks at 45mg/day, then treatment should be stopped. Patients with depression should be treated for a sufficient period of at least 6 months to ensure that they are free from symptoms. After this, treatment can be gradually discontinued.

Elderly: The recommended dose is the same as that for adults. In elderly patients an increase in dosing should be done under close supervision to elicit a satisfactory and safe response.

Children: Since safety and efficacy of mirtazapine tablets has not been established in children, it is not recommended to treat children with mirtazapine tablets. Two randomised placebo-controlled trials failed to demonstrate efficacy for mirtazapine tablets in the treatment of children and adolescents with major depressive disorder. Safety and efficacy of mirtazapine tablets in paediatric depression cannot be extrapolated from adult data.

Hepatic impairment

The clearance of mirtazapine may be decreased in patients with hepatic insufficiency. This should be taken into account when prescribing Mirtazapine tablets to this category of patients, particularly with severe hepatic impairment, as patients with severe hepatic impairment have not been investigated (see section 4.4)

Mirtazapine has a half-life of 20-40 hours and therefore Mirtazapine tablets are suitable for once-a-day administration. It should be taken preferably as a single night-time dose before going to bed. Mirtazapine tablets may also be given in sub-doses equally divided over the day (once in the morning and once at night-time).

The tablets should be taken orally, with fluid, and swallowed without chewing.

Treatment should preferably be continued until the patient has been completely symptom-free for 4-6 months. After this, treatment can be gradually discontinued. Treatment with an adequate dose should result in a positive response within 2-4 weeks. With an insufficient response, the dose can be increased up to the maximum dose. If there is no response within a further 2-4 weeks, then treatment should be stopped.

Withdrawal symptoms seen on discontinuation of Mirtazapine

Abrupt discontinuation should be avoided (see section 4.4 and section 4.8). If intolerable symptoms occur following a decrease in the dose or upon discontinuation of treatment, then resuming the previously prescribed dose may be considered. Subsequently, the physician may continue decreasing the dose, but at a more gradual rate.

4.3 Contraindications

Oversensitivity to Mirtazapine or any ingredients of Mirtazapine 30 mg Film coated tablets.
Concomitant use of mirtazapine with monoamine oxidase (MAO) inhibitors (see section 4.5).

4.4 Special warnings and precautions for use

Use in children and adolescents under 18 years of age:

Mirtazapine should not be used in the treatment of children and adolescents under the age of 18 years. Suicide-related behaviours (suicide attempt and suicidal thoughts), and hostility (predominantly aggression, oppositional behaviour and anger) were more frequently observed in clinical trials among children and adolescents treated with antidepressants compared to those treated with placebo. If, based on clinical need, a decision to treat is nevertheless taken, the patient should be carefully monitored for the appearance of suicidal symptoms. In addition, long-term safety data in children and adolescents concerning growth, maturation and cognitive and behavioural development are lacking.

Suicide/suicidal thoughts or clinical worsening

Depression is associated with an increased risk of suicidal thoughts, self harm and suicide (suicide-related events). This risk persists until significant remission occurs. As improvement may not occur during the first few weeks or more of treatment, patients should be closely monitored until such improvement occurs. It is general clinical experience that the risk of suicide may increase in the early stages of recovery.

Patients with a history of suicide-related events, or those exhibiting a significant degree of suicidal ideation prior to commencement of treatment are known to be at greater risk of suicidal thoughts or suicide attempts, and should receive careful monitoring during treatment. A meta-analysis of placebo-controlled clinical trials of antidepressants in adult patients with psychiatric disorders showed an increased risk of suicidal behavior with antidepressants compared to placebo in patients less than 25 years old.

Close supervision of patients and in particular those at high risk should accompany therapy with antidepressants especially in early treatment and following dose changes. Patients (and caregivers of patients) should be alerted about the need to monitor for any clinical worsening, suicidal behavior or thoughts and unusual changes in behaviour and to seek medical advice immediately if these symptoms present.

With regard to the chance of suicide, in particular at the beginning of treatment, only a limited number of Mirtazapine film-coated tablets should be given to the patient.

Bone marrow depression

Bone marrow depression, usually presenting as granulocytopenia or agranulocytosis, has been reported during treatment with Mirtazapine. Reversible agranulocytosis has been reported as a rare occurrence in clinical studies with Mirtazapine. In the post marketing period with Mirtazapine very rare cases of agranulocytosis have been reported, mostly reversible, but in some cases fatal. Fatal cases concerned patients with an age above 65. The physician should be alert for symptoms like fever, sore throat, stomatitis or other signs of infection; when such symptoms occur, treatment should be stopped and blood counts taken.

Jaundice

Treatment should be discontinued if jaundice occurs.

Careful dosing as well as regular and close monitoring is necessary in patients with:

- epilepsy and organic brain syndrome: Although clinical experience indicates that epileptic seizures are rare during Mirtazapine treatment, as with other antidepressants, Mirtazapine should be introduced cautiously in patients who have a history of seizures. Treatment should be discontinued in any patient who develops seizures, or where there is an increase in seizure frequency.
- hepatic impairment: Following a single 15 mg oral dose of mirtazapine, the clearance of mirtazapine was approximately 35% decreased in mild to moderate hepatically impaired patients, compared to subjects with normal hepatic function. The average plasma concentration of mirtazapine was about 55% increased.
- renal impairment: Following a single 15 mg oral dose of mirtazapine, in patients with moderate (creatinine clearance < 40ml/min) and severe (creatinine clearance 10 ml/min) renal impairment the clearance of mirtazapine was about 30% and 50% decreased respectively, compared to normal subjects. The average plasma concentration of mirtazapine was about 55 % and 115% increased respectively. No significant differences were found in patients with mild renal impairment (creatinine clearance < 80ml/min) as compared to the control group.
- cardiac diseases like conduction disturbances, angina pectoris and recent myocardial infarction, where normal precautions should be taken and concomitant medicines carefully administered.
- low blood pressure.
- diabetes mellitus: In patients with diabetes, antidepressants may alter glycaemic control. Insulin and/or oral hypoglycaemic dosage may need to be adjusted and close monitoring is recommended.

Like with other antidepressants, the following should be taken into account:

- worsening of psychotic symptoms can occur when antidepressants are administered to patients with schizophrenia or other psychotic disturbances; paranoid thoughts can be intensified
- when the depressive phase of bipolar disorder is being treated, it can transform into the manic phase. Patients with a history of mania/hypomania should be closely monitored. Mirtazapine should be discontinued in any patient entering a manic phase.
- although Mirtazapine is not addictive, post-marketing experience shows that the abrupt termination of treatment after long-term administration may sometimes result in withdrawal symptoms. The majority of withdrawal reactions are mild and self-limiting. Among the various reported withdrawal symptoms, dizziness, agitation, anxiety, headache and nausea are the most frequently reported. Even though they have been reported as withdrawal symptoms, it should be realized that these symptoms may be related to underlying disease. As advised in section 4.2, it is recommended to discontinue treatment with mirtazapine gradually.
- care should be taken in patients with cicturition disturbances like prostate hypertrophy and in patients with acute narrow-angle glaucoma and increased intra-ocular pressure (although there is little chance of problems with Mirtazapine because of its very weak anticholinergic activity).
- akathisia/psychomotor restlessness: The use of antidepressants have been associated with the development of

akathisia, characterized by a subjectively unpleasant or distressing restlessness and need to move often accompanied by an inability to sit or stand still. This is most likely to occur within the first few weeks of treatment. In patients who develop these symptoms, increasing the dose may be detrimental.

Hyponatraemia

Hyponataemia, probably due to inappropriate antidiuretic hormone secretion (SIADH), has been reported very rarely with the use of mirtazapine. Caution should be exercised in patients at risk, such as elderly patients or patients concomitantly treated with medications known to cause hyponatraemia.

Serotonin syndrome

Interaction with serotonergic active substances: serotonin syndrome may occur when selective serotonin reuptake inhibitors (SSRIs) are used concomitantly with other serotonergic active substances (see section 4.5). Symptoms of serotonin syndrome may be hyperthermia, rigidity, myoclonus, autonomic instability with possible rapid fluctuations of vital signs, mental status changes that include confusion, irritability and extreme agitation progressing to delirium and coma. From post marketing experience it appears that serotonin syndrome occurs very rarely in patients treated with Mirtazapine alone (see section 4.8).

Elderly patients

Elderly patients are often more sensitive, especially with regard to the undesirable effects of antidepressants. During clinical research with Mirtazapine, undesirable effects have not been reported more often in elderly patients than in other age groups.

Lactose

This medicinal product contains lactose. Patients with rare hereditary problems of galactose intolerance, the Lapp lactose deficiency or glucose-galactose malabsorption should not take this medicine.

4.5 Interaction with other medicinal products and other forms of interaction

Pharmacodynamic interactions

- Mirtazapine should not be administered concomitantly with MAO inhibitors or within two weeks after discontinuation of MAO inhibitor therapy. In the opposite way about two weeks should pass before patients treated with Mirtazapine should be treated with MAO inhibitors (see section 4.3).
- In addition, as with SSRIs, co-administration with other serotonergic active substances (L-tryptophan, triptans, tramadol, linezolid, SSRIs, venlafaxine, lithium and St. John's Wort – *Hypericum perforatum* – preparations) may lead to an incidence of serotonin associated effects (serotonin syndrome: see section 4.4). Caution should be advised and a closer clinical monitoring is required when these active substances are combined with Mirtazapine.
- Mirtazapine may increase the sedating properties of benzodiazepines and other sedatives (notably most antipsychotic, antihistamine H1 antagonists, opioids). Caution should be exercised when these medicinal products are prescribed together with mirtazapine.
- Mirtazapine may increase the CNS depressant effect of alcohol. Patients should therefore be advised to avoid alcoholic beverages while taking mirtazapine.
- Mirtazapine dosed at 30 mg once daily caused a small but statistically significant increase in the international normalized ratio (INR) in subjects treated with warfarin. As at a higher dose of mirtazapine a more pronounced effect can not be excluded, it is advisable to monitor the INR in case of concomitant treatment of warfarin with mirtazapine.

Pharmacokinetic interactions

- Carbamazepine and phenytoin, CYP3A4 inducers, increased Mirtazapine clearance about twofold, resulting in a decrease in average plasma Mirtazapine concentration of 60% and 45% respectively. When carbamazepine or any other inducer of hepatic metabolism (such as rifampicin) is added to mirtazapine therapy, the mirtazapine dose may have to be increased. If treatment with such medicinal product is discontinued, it may be necessary to reduce the mirtazapine

dose.

- Co-administration of the potent CYP3A4 inhibitor ketoconazole increased the peak plasma levels and the AUC of mirtazapine by approximately 40% and 50% respectively.
- When cimetidine (weak inhibitor of CYP1A2, CYP2D6 and CYP3A4) is administered with mirtazapine, the mean plasma concentration of mirtazapine may increase more than 50%. Caution should be exercised and the dose may have to be decreased when co-administering mirtazapine with potent CYP3A4 inhibitors, azole antifungals, erythromycin, cimetidine or nefazodone.
- Interaction studies did not indicate any relevant pharmacokinetic effects on concurrent treatment of mirtazapine with paroxetine, amitriptylin, risperidone or lithium.

4.6 Fertility, pregnancy and lactation

Limited data of the use of mirtazapine in pregnant women do not indicate an increased risk for congenital malformations. Studies in animals have not shown any teratogenic effects of clinical relevance however developmental toxicity has been observed (see section 5.3).

Epidemiological data have suggested that the use of SSRIs in pregnancy, particularly in late pregnancy, may increase the risk of persistent pulmonary hypertension in the newborn (PPHN). Although no studies have investigated the association of PPHN to mirtazapine treatment, this potential risk cannot be ruled out taking into account the related mechanism of action (increase in serotonin concentrations). Caution should be exercised when prescribing to pregnant women. If Mirtazapine is used until, or shortly before birth, postnatal, monitoring of the newborn is recommended to account for possible discontinuation effects.

Animal studies and limited human data have shown excretion of mirtazapine in breast milk only in very small amounts. A decision on whether to continue/discontinue breast-feeding or to continue/discontinue therapy with Mirtazapine should be made taking into account the benefit of breast-feeding to the child and the benefit of Mirtazapine therapy to the woman.

4.7 Effects on ability to drive and use machines

Mirtazapine 30 mg Film-coated tablets have sedative properties and may impair concentration and alertness. Patients treated with Mirtazapine 30 mg Film-coated tablets should avoid the performance of potentially dangerous tasks, which require alertness and good concentration, such as driving a motor vehicle or operating machinery.

4.8 Undesirable effects

Depressed patients display a number of symptoms that are associated with the illness itself. It is therefore sometimes difficult to ascertain which symptoms are a result of the illness itself and which are a result of treatment with Mirtazapine.

The most commonly reported adverse reactions, occurring in more than 5% of patients treated with Mirtazapine in randomized placebo-controlled trials (see below) are somnolence, sedation, dry mouth, weight increased, increase in appetite, dizziness and fatigue.

All randomized placebo-controlled trials in patients (including indications other than major depressive disorder), have been evaluated for adverse reactions of Mirtazapine. The meta-analysis considered 20 trials, with a planned duration of treatment up to 12 weeks, with 1501 patients (134 person years) receiving doses of mirtazapine up to 60 mg and 850 patients (79 person years) receiving placebo. Extension phases of these trials have been excluded to maintain comparability to placebo treatment.

Table 1 shows the categorized incidence of the adverse reactions, which occurred in the clinical trials statistically significantly more frequently during treatment with Mirtazapine than with placebo, added with adverse reactions from spontaneous reporting. The frequencies of the adverse reactions from spontaneous reporting are based on the reporting rate of these events in the clinical trials. The frequency of adverse reactions from spontaneous reporting for which no cases in the randomized placebo-controlled patient trials were observed with mirtazapine has been classified as 'not known'.

System organ class	Very common (≥1/10)	Common (≥1/100 to < 1/10)	Uncommon (≥1/1,000 to < 1/100)	Rare (≥1/10,000 to < 1/1,000)	Frequency not known
Blood and the lymphatic system disorders					<ul style="list-style-type: none"> • Bone marrow depression (granulocytopenia, agranulocytosis, aplastic anaemia, thrombocytopenia) • Eosinophilia
Endocrine disorders					<ul style="list-style-type: none"> • Inappropriate antidiuretic hormone secretion
Metabolism and nutrition disorders	<ul style="list-style-type: none"> • Increase in appetite¹ • Weight increased 				<ul style="list-style-type: none"> • Hyponatraemia
Psychiatric disorders		<ul style="list-style-type: none"> • Abnormal dreams • Confusion • Anxiety^{2,5} • Insomnia^{3,5} 	<ul style="list-style-type: none"> • Nightmares² • Mania • Agitation² • Hallucinations Psychomotor restlessness (incl. akathisia, hyperkinesia) 		<ul style="list-style-type: none"> • Suicidal ideation⁶ • Suicidal behaviour⁶
Nervous system disorders	<ul style="list-style-type: none"> • Somnolence^{1,4} • Sedation^{1,4} • Headache² 	<ul style="list-style-type: none"> • Lethargy¹ • Dizziness • Tremor 	<ul style="list-style-type: none"> • Paraesthesia² • Restless legs • Syncope 	<ul style="list-style-type: none"> • Myoclonus 	<ul style="list-style-type: none"> • Convulsions (insults) • Serotonin syndrome • Oral paraesthesia
Vascular disorders		<ul style="list-style-type: none"> • (Orthostatic) hypotension 	<ul style="list-style-type: none"> • Hypotension² 		
Gastrointestinal disorders	<ul style="list-style-type: none"> • Dry mouth 	<ul style="list-style-type: none"> • Nausea³ • Diarrhea² • Vomiting² 	<ul style="list-style-type: none"> • Oral hypoaesthesia 		<ul style="list-style-type: none"> • Mouth oedema
Hepatobiliary disorders				<ul style="list-style-type: none"> • Elevations in serum transaminase activities 	
Skin and subcutaneous tissue disorders		<ul style="list-style-type: none"> • Exanthema² 			<ul style="list-style-type: none"> • Stevens-Johnson Syndrome • Dermatitis bullous • Erythema multiforme • Toxic epidermal necrolysis
Musculoskeletal and connective tissue disorders		<ul style="list-style-type: none"> • Arthralgia • Myalgia • Back pain¹ 			

¹ In clinical trials these events occurred statistically significantly more frequently during treatment with Mirtazapine than with placebo.

² In clinical trials these events occurred more frequently during treatment with placebo than with Mirtazapine, however not statistically significantly more frequently.

³ In clinical trials these events occurred statistically significantly more frequently during treatment with placebo than with Mirtazapine

⁴ N.B. dose reduction generally does not lead to less somnolence/sedation but can jeopardize antidepressant efficacy.

⁵ Upon treatment with antidepressants in general, anxiety and insomnia (which may be symptoms of depression) can develop or become aggravated. Under mirtazapine treatment, development or aggravation of anxiety and insomnia has been reported.

⁶ Cases of suicidal ideation and suicidal behaviours have been reported during Mirtazapine therapy or early after treatment discontinuation (see section 4.4).

In laboratory evaluations in clinical trials transient increases in transaminases and gamma-glutamyltransferase have been observed (however associated adverse events have not been reported statistically significantly more frequently with Mirtazapine than with placebo)

4.9 Overdose

Toxicity studies in animals indicate that clinically relevant cardiotoxic effects will not occur after overdosing with Mirtazapine 30mg Film-coated tablets. Experience in clinical trials and from the market has shown that no serious adverse effects have been associated with Mirtazapine 30 mg Film-coated tablets in overdose. Symptoms of acute overdose are confined to prolonged sedation.

Cases of overdose should be treated by gastric lavage with appropriate symptomatic and supportive therapy for vital functions.

5 PHARMACOLOGICAL PROPERTIES

5.1 Pharmacodynamic properties

Mirtazapine is a centrally active presynaptic alpha-2 antagonist, which increases central noradrenergic and serotonergic neurotransmission. The enhancement of serotonergic neurotransmission is specifically mediated via 5-HT₁ receptors, because 5-HT₂ and 5-HT₃ receptors are blocked by Mirtazapine. Both enantiomers of Mirtazapine are presumed to contribute to the anti-depressant activity, the S(+) enantiomer by blocking alpha 2 and 5-HT₂ receptors and the R(-) enantiomer by blocking 5-HT₃ receptors.

The histamine H₁-antagonistic activity of mirtazapine is responsible for its sedative properties. Mirtazapine is generally well tolerated. It has practically no anti-cholinergic activity and, at therapeutic doses, has practically no effect on the cardiovascular system.

5.2 Pharmacokinetic properties

Following oral administration of Mirtazapine 30mg Film-coated tablets, the active constituent mirtazapine is rapidly and well adsorbed (bioavailability ~50%), obtaining peak plasma levels after about 2 hours. Binding of mirtazapine to plasma proteins is approx. 85%. The mean half-life of elimination is 20-40 hours; longer half-lives, up to 65 hours, have occasionally been seen in young men. The half-life of elimination is sufficient to justify once-a-day dosing. Steady state is obtained after 3-4 days, after which there is no further accumulation. Mirtazapine displays linear pharmacokinetics within the recommended dose range. Food consumption has no influence on the pharmacokinetics of mirtazapine.

Mirtazapine is extensively metabolised and eliminated via the urine and faeces within a few days. Major pathways of biotransformation are demethylation and oxidation, followed by conjugation.

In vitro data from human liver microsomes indicate that cytochromes P450 enzymes CYP2D6 and CYP1A2 are involved in the formation of the 8- hydroxy metabolite of mirtazapine, whereas CYP3A4 is considered to be responsible for the formation of the N-desmethyl and N-oxide metabolites. The demethyl metabolite is pharmacologically active and appears to have the same pharmacokinetic profile as the parent compound. Clearance of mirtazapine may be decreased as a result of renal or hepatic insufficiency.

5.3 Preclinical safety data

No special particulars.

6 PHARMACEUTICAL PARTICULARS

6.1 List of excipients

Lactose monohydrate
Pregelatinised maize starch
Anhydrous colloidal Silica
Croscarmellose sodium
Magnesium stearate
Opadry 03F23252, Orange
Hypromellose 6cP
Titanium dioxide (E171)
Macrogol /PEG 8000
Yellow Iron oxide (E172)
Red Iron oxide (E172)

6.2 Incompatibilities

Not applicable.

6.3 Shelf life

3 years.

6.4 Special precautions for storage

This medicinal product does not require any special storage precautions.

6.5 Nature and contents of container

Blister pack (Al/PVC) and / or PP-container (securitainer): 28, 30 tablets.

Not all pack sizes may be marketed.

6.6 Special precautions for disposal of a used medicinal product or waste materials derived from such medicinal product and other handling of the product

No special requirements.

7 MARKETING AUTHORISATION HOLDER

Relon Chem Limited
27, Old Gloucester street
London, UK WC1 3XX

8 MARKETING AUTHORISATION NUMBER

PA 1128/6/1

9 DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 7th July 2006

10 DATE OF REVISION OF THE TEXT

May 2011