

SUMMARY OF PRODUCT CHARACTERISTICS

1. NAME OF THE MEDICINAL PRODUCT

EDRONAX 4 mg Tablets

2. QUALITATIVE AND QUANTITATIVE COMPOSITION

One tablet contains 4mg of reboxetine
For full list of excipients, see section 6.1.

3. PHARMACEUTICAL FORM

Tablet
White, round, convex tablet with a breakline on one side. A 'P' is marked on the left side of the breakline. A 'U' is marked on the right side of the breakline. The side opposite the breakline is marked '7671'. The tablet can be divided into equal halves.

4. CLINICAL PARTICULARS

4.1. Therapeutic Indications

Reboxetine is indicated for the acute treatment of depressive illness/major depression and for maintaining the clinical improvement in patients initially responding to treatment.

4.2. Posology and Method of Administration

Reboxetine is for oral use.
The onset of the clinical effect is generally seen after 14 days from treatment start.

Use in adults

The recommended therapeutic dose is 4 mg twice a day (b.i.d.) i.e.8 mg/day administered orally. The full therapeutic dose can be given upon starting treatment. After 3-4 weeks, this dose can be increased to 10 mg/day in case of incomplete clinical response. The maximum daily dose should not exceed 12 mg. The minimum effective dose has not yet been established.

Use in the elderly

Elderly patients have been studied in clinical trials at doses of 2 mg b.i.d. However, safety and efficacy have not been evaluated in placebo-controlled conditions. Therefore, as for other antidepressants that have not been studied in placebo-controlled conditions, reboxetine cannot be recommended.

Use in children and adolescents under the age of 18 years

Reboxetine should not be used in the treatment of children and adolescents under the age of 18 years (see section 4.4).

Use in patients with renal or hepatic insufficiency

The starting dose in patients with renal or hepatic insufficiency should be 2 mg b.i.d which can be increased based on patient tolerance.

4.3. **Contra-indications**

Known hypersensitivity to reboxetine or any of the components of the product.

4.4. **Special Warnings and Special Precautions for Use**

Use in children and adolescents under 18 years of age

Reboxetine 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.

As reboxetine has not been tested in patients with convulsive disorders in clinical studies and since rare cases of seizures have been reported in clinical studies, it should be given under close supervision to subjects with a history of convulsive disorders and it must be discontinued if the patient develops seizures.

Concomitant use of MAO-inhibitors (including linezolid (an antibiotic which is a reversible non-selective MAOI) and methylene blue) and reboxetine should be avoided in view of the potential risk (tyramine-like effect) based on their mechanisms of action.

Concomitant use of reboxetine with other antidepressants (tricyclics, MAO inhibitors, SSRIs and lithium) has not been evaluated during clinical trials.

As with all antidepressants, switches to mania/hypomania have occurred during the clinical studies. Close supervision of bipolar patients is, therefore, recommended.

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 antidepressant drugs in adult patients with psychiatric disorders showed an increased risk of suicidal behaviour 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 drug therapy 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 behaviour or thoughts and unusual changes in behaviour and to seek medical advice immediately if these symptoms present.

Clinical experience with reboxetine in patients affected by serious concomitant systemic illnesses is limited. Close supervision should be applied in patients with current evidence of urinary retention, prostatic hypertrophy, glaucoma and history of cardiac disease.

At doses higher than the maximum recommended, orthostatic hypotension has been observed with greater frequency than that observed at recommended doses. Particular attention should be paid when administering reboxetine with other drugs known to lower blood pressure.

Clinical experience with reboxetine in the long-term treatment of elderly patients is, at present, limited. In this population, lowering of mean potassium levels was found starting from week 14; the magnitude of this reduction did not exceed 0.8 mmol/litre and potassium levels never dropped below normal limits.

Mydriasis has been reported in association with reboxetine; therefore, caution should be used when prescribing reboxetine to patients with increased intraocular pressure or those at risk of acute narrow-angle glaucoma.

4.5. Interactions with other medicinal products and other forms of interaction

In vitro metabolism studies indicate that reboxetine is primarily metabolised by the CYP3A4 isozyme of cytochrome P450; reboxetine is not metabolized by CYP2D6. Therefore potent inhibitors of CYP3A4 (ketoconazole, nefazodone, erythromycin and fluvoxamine), would be expected to increase plasma concentrations of reboxetine. In a study in healthy volunteers, ketoconazole, a potent inhibitor of CYP3A4, was found to increase plasma concentrations of the reboxetine enantiomers by approximately 50%. Because of reboxetine's narrow therapeutic margin, inhibition of elimination is a major concern. Reboxetine therefore should not be given together with drugs known to inhibit CYP3A4 such asazole antifungal agents, macrolide antibiotics such as erythromycin, or fluvoxamine.

Low reboxetine serum levels have been reported with the concurrent administration of CYP3A4 inducers such as phenobarbital and carbamazepine. Examples of other CYP3A4 inducers that may reduce the serum levels of reboxetine include but are not limited to phenytoin, rifampicin and St John's Wort.

In vitro studies have shown that reboxetine does not inhibit the activity of the following P450 isoenzymes: CYP1A2, CYP2C9, CYP2C19 and CYP2E1. Pharmacokinetic interactions would not be expected with compounds metabolised by these enzymes. At concentrations which exceed those in clinical use, reboxetine inhibits CYP2D6 and CYP3A4, however, the results of *in vivo* studies suggest that interactions with other drugs metabolised by these enzymes are unlikely.

No significant reciprocal pharmacokinetic interaction has been found between reboxetine and lorazepam. During their co-administration in healthy volunteers, mild to moderate drowsiness and short lasting orthostatic acceleration of heart rate have been observed.

Reboxetine does not appear to potentiate the effect of alcohol on cognitive functions in healthy volunteers.

Concomitant use of MAO-inhibitors (including linezolid (an antibiotic which is a reversible non-selective MAOI) and methylene blue) and reboxetine should be avoided in view of the potential risk (tyramine-like effect) based on their mechanisms of action.

Concomitant use of reboxetine with other antidepressants (tricyclics, MAO inhibitors, SSRIs and lithium) has not been evaluated during clinical trials.

Concomitant use of ergot derivatives and reboxetine might result in increased blood pressure.

Food intake delayed the absorption of reboxetine, but did not significantly influence the extent of absorption.

Although data are not available from clinical studies, the possibility of hypokalaemia with concomitant use of potassium losing diuretics should be considered.

In an in vivo multiple-dose study performed in healthy volunteers, no clinically significant interaction between fluoxetine and reboxetine was observed. In patients, a different effect and safety profile upon combination of reboxetine and fluoxetine cannot be excluded.

4.6. Pregnancy and lactation

PREGNANCY

No clinical trial data on exposure to reboxetine during pregnancy are available. However, postmarketing safety data on a very limited number of exposed pregnancies indicate no adverse effects of reboxetine on pregnancy or on the health of the foetus/newborn child.

Animal studies in general do not indicate direct or indirect harmful effects with respect to pregnancy, embryonal/foetal development or parturition. Some impairment of growth and development has been noted in rat neonates (see section 5.3).

Reboxetine should only be used in pregnancy if the potential benefits of treatment to the mother outweigh the possible risks to the developing foetus.

LACTATION

Reboxetine is known to be excreted in breast milk. The level of active substance transferred in breast milk is anticipated to be very low, however there is insufficient information to exclude a risk to the nursing infant. The use of reboxetine during breastfeeding can be considered if the potential benefits outweigh the risk for the child.

4.7. Effects on ability to drive and use machines

Although reboxetine has been shown to have negligible effect on psychomotor performance in healthy volunteers, any psychoactive drug can impair judgement or skills. Patients should be cautioned about driving or operating hazardous machinery until reasonably certain that their performance has not been affected.

4.8. Undesirable effects

Over 2100 patients received reboxetine in clinical studies, approximately 250 of which received reboxetine for at least 1 year.

The information provided in *Table 1* below is a summary of adverse events observed in patients treated with reboxetine in placebo-controlled clinical studies of 8 weeks duration or less. In addition, the table also includes adverse events observed from postmarketing experience (frequency not known).

Table 1: Adverse events

Very Common (≥1/10)	Common (≥1/100 to <1/10)	Uncommon (≥1/1000 to <1/100)	Rare (≥1/10000 to <1/1000)	Frequency not Known
<i>Metabolism and nutrition disorders</i>				
	Decreased appetite			Hyponatraemia
<i>Psychiatric disorders</i>				
Insomnia	Agitation*, Anxiety*			Aggressive behaviour, Hallucination, Suicidal Ideation/behaviour**
<i>Nervous system disorders</i>				
Dizziness	Headache, Paraesthesia*, Akathisia,			

	Dysguesia			
<i>Eye disorders</i>				
	Accommodation disorder	Mydriasis*	Glaucoma*	Intraocular pressure increased
<i>Ear and labyrinth disorders</i>				
		Vertigo		
<i>Cardiac disorders</i>				
	Tachycardia, Palpitations			
<i>Vascular disorders</i>				
	Vasodilatation, Hypotension, Hypertension*			Peripheral coldness, Raynaud's phenomenon
<i>Gastrointestinal disorders</i>				
Dry mouth, Constipation, Nausea*	Vomiting*			
<i>Skin and subcutaneous tissue disorders</i>				
Hyperhidrosis	Rash*			Allergic dermatitis
<i>Renal and urinary disorders</i>				
	Sensation of incomplete bladder emptying, Urinary tract infection, Dysuria, Urinary retention			
<i>Reproductive system and breast disorders</i>				
	Erectile dysfunction, Ejaculatory pain, Ejaculatory delay			Testicular pain
<i>General disorders and administration site conditions</i>				
	Chills			Irritability

* these adverse events also occurred in postmarketing experience

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

In placebo-controlled studies of 8 weeks duration or less, adverse events were reported in approximately 80% of reboxetine-treated patients and in approximately 70% of placebo-treated patients. Discontinuation rates for adverse events were approximately 9% and 5% for reboxetine- and placebo-treated patients, respectively.

As for long-term tolerability, 143 reboxetine-treated and 140 placebo-treated adult patients participated in a long term placebo controlled study. Adverse events newly emerged on long term treatment in 28% of the reboxetine treated patients and 23% of the placebo-treated patients and caused discontinuation in 4% and 1% of the cases respectively. There was a similar risk of the development of individual events with reboxetine and placebo. In the long term studies, no individual events were seen which have not been seen on short term treatment.

In short-term controlled studies of patients with depression, no clinically significant between-gender differences were noted in the frequency of treatment emergent symptoms, with the exception of urologic events (such as the sensation of incomplete bladder emptying, dysuria and urinary frequency), which were reported in a higher percentage of reboxetine-treated male patients (31.4% [143/456]) than reboxetine-treated female patients (7.0% [59/847]). In contrast, the frequency of urologic-related events was similar among male (5.0% [15/302]) and female (8.4% [37/440]) placebo-treated patients.

In the elderly population, frequency of total adverse events, as well as of individual events, was no higher than that reported above.

In pre-marketing clinical studies, signs and symptoms newly reported following discontinuation occurred in approximately (5%) of the reboxetine treated patients and approximately (4%) of placebo-treated patients. In post-marketing experience, there have been a few spontaneous reports of withdrawal symptoms including headache, dizziness, nervousness and nausea; however, no consistent pattern of events on cessation of treatment with reboxetine was evident in these reports.

In those short-term studies in depression where heart rate was assessed with ECG, reboxetine was associated with mean increases in heart rate, compared to placebo, of 6 to 12 beats per minute.

In all short-term controlled studies in depression, the mean change in pulse (in beats per minute) for reboxetine-treated patients was 3.0, 6.4 and 2.9 in the standing, sitting and supine positions respectively, compared with 0, 0, and -0.5 for placebo-treated patients in the corresponding positions. In these same studies, 0.8% of reboxetine-treated patients discontinued the drug because of tachycardia compared with 0.1% of placebo-treated patients.

Reporting of suspected adverse reactions

Any suspected adverse events should be reported to the Ministry of Health according to the National Regulation by using an online form

(<http://forms.gov.il/globaldata/getsequence/getsequence.aspx?formType=AdversEffectMedic@moh.health.gov.il>) or by email (adr@MOH.HEALTH.GOV.IL).

4.9. Overdose

The acute toxicity studies carried out in animals indicate a very low toxicity, with a wide safety margin with respect to the pharmacologically active doses. Clinical signs and cause of death were related to CNS stimulation (mainly convulsive symptoms).

In a few cases doses higher than those recommended were administered to patients (12 mg to 20 mg/day) for a period ranging from a few days to some weeks during clinical studies: newly reported complaints include postural hypotension, anxiety and hypertension. Elderly might be particularly vulnerable to overdose.

In premarketing clinical studies, there were 5 reports of reboxetine overdose alone or in combination with other pharmacologic agents. The amount of reboxetine ingested was 52 mg as the sole agent by 1 patient and 20 mg in combination with other agents by another patient. The remaining 3 patients ingested unknown quantities of reboxetine. All 5 patients recovered fully. There were no reports of ECG abnormalities, coma, or convulsions following overdose with reboxetine alone.

In postmarketing experience, there have been few reports of overdose in patients taking reboxetine alone; none of these have proved fatal. Non-fatal overdoses in patients have been reported for patients taking up to 240 mg of reboxetine. One fatal overdose was reported in a patient who ingested reboxetine in combination with amitriptyline (doses unknown).

In case of overdose, monitoring of cardiac function and vital signs is recommended. General symptomatic supportive and/or emetic measures might be required.

5. PHARMACOLOGICAL PROPERTIES

5.1. Pharmacodynamic properties

Pharmacotherapeutic group: Other Antidepressants
ATC code: NO6A X18

Reboxetine is a highly selective and potent inhibitor of noradrenaline reuptake. It has only a weak effect on the 5-HT reuptake and does not affect the uptake of dopamine.

Noradrenaline reuptake inhibition and the consequent increase of noradrenaline availability in the synaptic cleft and modification of noradrenergic transmission, reportedly is among the most relevant mechanisms of action of known antidepressant drugs.

In vitro, studies have shown that reboxetine has no significant affinity for adrenergic (α_1 , α_2 , β) and muscarinic receptors; antagonism of such receptors has been described to be associated with cardiovascular, anticholinergic and sedative side effects of other antidepressant drugs.

Reboxetine is devoid of *in vitro* binding affinity for either α_1 or α_2 adrenoceptors, however, a functional interference with α -adrenoceptors at high doses *in vivo* cannot be excluded.

In a post hoc stratified analysis of data from 11 placebo-controlled trials involving 2400 patients, there was no statistical difference in response rates on the primary endpoint (HAMD 21 item scale) for reboxetine versus placebo patients with mild to moderate severity of depression. Efficacy was only clearly demonstrated in patients with severe or very severe depression. From these trials there are limited efficacy data available in the use of reboxetine in patients with mild to moderate severity of depression.

5.2. Pharmacokinetic properties

After oral administration of a single 4 mg reboxetine dose to healthy volunteers, peak levels of about 130 ng/ml are achieved within 2 h post-dosing. Data indicate that absolute bioavailability is at least 60%.

Reboxetine plasma levels decreased monoexponentially with a half-life of about 13 h. Steady-state conditions are observed within 5 days. Linearity of the pharmacokinetics was shown in the range of single oral doses in the clinically recommended dose-ranges.

The drug appears to be distributed into total body water. Reboxetine is 97 % bound to human plasma proteins in young and 92% in elderly (with affinity markedly higher for α_1 acid glycoprotein than albumin), with no significant dependence of the concentration of drug.

Reboxetine is predominantly metabolised *in vitro* via cytochrome P4503A (CYP3A4). *In vitro* studies have shown that reboxetine does not inhibit the activity of the following isozymes of cytochrome P450: CYP1A2, CYP2C9, CYP2C19, and CYP2E1. Reboxetine inhibits both CYP2D6 and CYP3A4 with low binding affinities, but has shown no effect on the *in vivo* clearance of drugs metabolized by these enzymes.

The amount of radioactivity excreted in urine accounts for 78 % of the dose. Even though unchanged drug is predominant in the systemic circulation (70% of total radioactivity, in terms of AUC), only 10% of the dose is excreted as unchanged drug in urine. These findings suggest that biotransformation rules the overall elimination of reboxetine and that metabolites excretion is limited by their formation. The main metabolic pathways identified are 2-O-dealkylation, hydroxylation of the ethoxyphenoxy ring and oxidation of the morpholine ring, followed by partial or complete glucuro- or sulpho-conjugation.

The drug is available as a racemic mixture (with both enantiomers being active in the experimental models): no chiral inversion, nor reciprocal pharmacokinetic interferences between enantiomers have been observed. Plasma levels of the more potent SS enantiomer are about two times lower and urinary excretion two times higher than those of the enantiomeric counterpart. No significant differences were observed in the terminal half-lives of the two enantiomers.

Increases in systemic exposure and half-life of approximately two-fold are observed in patients with renal insufficiency and hepatic insufficiency. Similar or somewhat greater (3-fold) increases in systemic exposure also occur in elderly patients relative to young healthy volunteers.

Data from *animal* studies indicate that reboxetine crosses the placenta and is distributed into breast milk.

5.3. Pre-clinical Safety Data

Reboxetine did not induce gene mutations in bacterial or mammalian cells *in vitro* but induced chromosomal aberrations in human lymphocytes *in vitro*. Reboxetine did not cause DNA damage in yeast cells or rat hepatocytes *in vitro*. Reboxetine did not cause chromosomal damage in an *in vivo* mouse micronucleus test, and did not increase tumor incidence in carcinogenicity studies in mice and rats.

Haemosiderosis was reported in toxicity studies in rats only.

Studies in animals have not demonstrated any teratogenic effect or any effect of the compound on global reproductive performance. Dosages that produced plasma concentrations within the therapeutic range for humans induced an impairment of growth and development and long term behavioural changes in offspring of rats.

In rats reboxetine is excreted in milk.

6. PHARMACEUTICAL PARTICULARS

6.1. List of Excipients

Cellulose microcrystalline
Dibasic calcium phosphate dihydrate
Crospovidone
Silicon dioxide
Magnesium stearate

6.2. Incompatibilities

Not applicable

6.3. Shelf-Life

3 years

6.4. Special Precautions for Storage

Store below 25° C.

6.5. Nature and Content of Container

The tablets are contained in aluminium PVDC / PVC-PVDC opaque blisters.
Each pack contains 20 or 60 tablets
Not all pack sizes may be marketed.

6.6. Special precautions for disposal

No special requirements.

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