

# MTnL<sup>TM</sup>

Tablets/Syrup

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## Composition:

Each tablet contain

Montelukast            10mg

Levocetirizine        5mg

Each 5ml contains

Montelukast            4mg

Levocetirizine        2.5mg

## Pharmacokinetic properties:

Peak plasma concentrations of montelukast are achieved in 3 to 4 hours after oral doses. The mean oral bioavailability is 64%. Montelukast is more than 99% bound to plasma proteins. It is extensively metabolised in the liver by cytochrome P450 isoenzymes CYP3A4, CYP2A6, and CYP2C9, and is excreted principally in the faeces via the bile.

Levocetirizine is rapidly and extensively absorbed following oral administration. In adults, peak plasma concentrations are achieved 0.9 hour after administration of the oral tablet. Levocetirizine is poorly metabolized and undergo renal excretion.

## Mechanism of Action

Montelukast selectively antagonizes leukotriene D<sub>4</sub> (LTD<sub>4</sub>) at the cysteinyl leukotriene receptor, CysLT<sub>1</sub>, in the human airway. Montelukast inhibits the actions of LTD<sub>4</sub> at the CysLT<sub>1</sub> receptor, preventing airway edema, smooth muscle contraction, and enhanced secretion of thick, viscous mucus.

Levocetirizine is an inverse agonist that decreases activity at histamine H1 receptors. This in turn prevents the release of other allergy chemicals and increased blood supply to the area, and provides



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relief from the typical symptoms associated with seasonal and perennial allergic rhinitis. It does not prevent the actual release of histamine from mast cells.

**Other pharmacodynamic properties:**

Montelukast, like zafirlukast, is a leukotriene receptor antagonist used as an alternative to anti-inflammatory medications in the management and chronic treatment of asthma and exercise-induced bronchospasm (EIB). Unlike zafirlukast, montelukast does not inhibit CYP2C9 or CYP3A4 and is, therefore, not expected to affect the hepatic clearance of drugs metabolized by these enzymes.

**Indication:**

MTnL Tablets are indicated for:

- Relief of symptoms of allergic rhinitis [seasonal or perennial]
- As prophylaxis in seasonal allergic rhinitis and
- Treatment of comorbid asthma and allergic rhinitis in patients 15 years of age and over.

MTnL syrup is indicated in children for treatment of:

- Allergic Rhinitis
- Bronchial Asthma

**Contraindication:**

MTnL is contraindicated in patients with:

- Known hypersensitivity to montelukast sodium, levocetirizine or cetirizine or to any other component of this product.
- Severe renal impairment at less than 10ml/min creatinine clearance.
- Patients with rare hereditary problems of galactose intolerance, the Lapp lactase deficiency or glucose-galactose malabsorption.

**Drug Interaction:**

- MONTELUKAST
- ✓ In drug-interaction studies, the recommended clinical dose of montelukast did not have clinically important effects on the pharmacokinetics of the following drugs: theophylline,



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prednisone, prednisolone, oral contraceptives (norethindrone 1 mg/ethinyl estradiol 35 mcg), terfenadine, digoxin, and warfarin.

- ✓ Although additional specific interaction studies were not performed, montelukast was used concomitantly with a wide range of commonly prescribed drugs in clinical studies without evidence of clinical adverse interactions. These medications included thyroid hormones, sedative hypnotics, non-steroidal anti-inflammatory agents, benzodiazepines, and decongestants. Phenobarbital, which induces hepatic metabolism, decreased the AUC of montelukast approximately 40% following a single 10-mg dose of montelukast. No dosage adjustment for montelukast is recommended.
  - ✓ It is reasonable to employ appropriate clinical monitoring when potent cytochrome P450 enzyme inducers, such as phenobarbital or rifampin, are co-administered with montelukast.
- LEVOCETIRIZINE
  - ✓ In vitro data indicate that levocetirizine is unlikely to produce pharmacokinetic interactions through inhibition or induction of liver drug-metabolizing enzymes.
  - ✓ No in vivo drug-drug interaction studies have been performed with levocetirizine.
  - ✓ Drug interaction studies have been performed with racemic cetirizine. Pharmacokinetic interaction studies performed with racemic cetirizine demonstrated that cetirizine did not interact with antipyrine, pseudoephedrine, erythromycin, azithromycin, ketoconazole and cimetidine.
  - ✓ There was a small decrease (~16%) in the clearance of cetirizine caused by a 400 mg dose of theophylline. It is possible that higher theophylline doses could have a greater effect.
  - ✓ Ritonavir increased the plasma AUC of cetirizine by about 42% accompanied by an increase in half-life (53%) and a decrease in clearance (29%) of cetirizine. The disposition of ritonavir was not altered by concomitant cetirizine administration.

**Adverse effects:**

- Montelukast

Common side effects include dyspepsia, abdominal pain, rash, dizziness, headache, fatigue, fever, trauma, cough, nasal congestion.

- Levocetirizine



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Use of levocetirizine has been associated with somnolence, fatigue, nasopharyngitis, dry mouth, and pharyngitis in subjects 12 years of age and older. Further uncommon incidences of adverse reactions like asthenia or abdominal pain were observed.

**Overdosage:** There is no data to prove the overdosage of this combination. However, overdosage has been reported with individual molecules.

**MONTELUKAST :** There have been reports of acute over-dosage in post-marketing experience and clinical studies with montelukast. These include reports in adults and children with a dose as high as 1000 mg. The clinical and laboratory findings observed were 6 consistent with the safety profile in adults and pediatric patients. There were no adverse experiences in the majority of over-dosage reports. The most frequently occurring adverse experiences were consistent with the safety profile of montelukast and included abdominal pain, somnolence, thirst, headache, vomiting and psychomotor hyperactivity. It is not known whether montelukast is removed by peritoneal dialysis or hemodialysis.

**LEVOCETIRIZINE:** Symptoms of overdose may include drowsiness in adults and initially agitation and restlessness followed by drowsiness, in children. There is no known specific antidote to levocetirizine. Should overdose occur, symptomatic or supportive treatment is recommended. Levocetirizine is not effectively removed by dialysis and dialysis will be ineffective unless a dialyzable agent has been concomitantly ingested.

#### **Warnings and Precautions:**

- In rare cases, patients on therapy with Montelukast may present with systemic eosinophilia, sometimes presenting with clinical features of vasculitis consistent with Churg-Strauss syndrome, a condition, which is often treated with systemic corticosteroid therapy. These events usually, but not always, have been associated with the reduction of oral corticosteroid therapy.
- Patients should avoid engaging in hazardous occupation requiring complete mental alertness such as driving or operating machinery when taking levocetirizine. Precaution is recommended with intake of alcohol and in those who are on CNS depressants

#### **Use in special population:**

1. **Pediatric:** Montelukast: The safety of Montelukast 4-mg chewable tablets in pediatric patients aged 2 to 14 years with allergic rhinitis is supported by data from studies conducted in pediatric patients aged 2 to 14 years with asthma. A safety study in pediatric patients 2 to



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14 years of age with seasonal allergic rhinitis demonstrated a similar safety profile. The safety and effectiveness in pediatric patients below the age of 12 months with asthma and 6 months with allergic rhinitis have not been established.

Levocetirizine: The safety and effectiveness of Levocetirizine in pediatric patients under 2 years of age have not been established. The effectiveness of Levocetirizine 2.5 mg once daily for the treatment of the symptoms of seasonal and perennial allergic rhinitis in children 2 to 6 years of age is supported by the extrapolation of demonstrated efficacy of Levocetirizine 5 mg once daily in patients 12 years of age and older and by the pharmacokinetic comparison in adults and children. In children 2 to 6 years of age the recommended dose of 2.5 mg once daily should not be exceeded.

- 2. Geriatric:** Montelukast: No overall differences in safety or effectiveness were observed between these subjects and younger subjects, and other reported clinical experience has not identified differences in responses between the elderly and younger patients, but greater sensitivity of some older individuals cannot be ruled out.

Levocetirizine: Clinical studies of levocetirizine for each approved indication did not include sufficient numbers of patients aged 65 years and older to determine whether they respond differently than younger patients. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range reflecting the greater frequency of decreased hepatic, renal, or cardiac function and of concomitant disease or other drug therapy

- 3. Liver impairment:** As montelukast is mainly excreted through bile, caution is to be exercised while prescribing this combination in patients with impaired hepatic function.
- 4. Renal failure:** As levocetirizine is mainly excreted through urine, dosage adjustment may be required in patients with impaired renal function. Hence this combination should be used with caution in such patients.
- 5. Pregnancy and lactation:** There are no adequate and well-controlled studies of either montelukast or levocetirizine in pregnant women. Hence this combination should not be used during pregnancy. Since levocetirizine is excreted in breast-milk the combination is not recommended during lactation

**Dosage:**

As directed by Physician.

**Presentation:**



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MTnL Tablet is available in a strip of 10 tablets

MTnL Syrup is available in a bottle of 60ml.

**Storage and handling:**

Store in a cool dry place. Protect from moisture and light.



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