Methimazole is a drug that belongs to the group of medicines called antithyroid medications. It is used to treat overactive thyroid (hyperthyroidism), Graves' disease, goiter, and for thyroid surgery preparation.

**Precautions**

Methimazole should not be used in the following conditions:

- In patients who have blood's idiosyncrasies (such as: agranulocytosis, granulocytopenia, leukocytosis, leukopenia, anemia or thrombocytopenia). Studies have shown that agranulocytosis is probably the most serious side effect of this drug, and for this reason it should not be used in patients who already have or are prone to the agranulocytosis. Agranulocytosis is actually a low white blood cell count or more precisely low granulocyte count which leads to a serious weakening of the immune system which further leads to an increased propensity to infections. In that cases, even mild/minor infections in patients with weakened immune system can cause serious complications. Studies have shown that the risk of agranulocytosis is greater if the initial dose is 30 mg daily than if the initial dose is 15 mg daily. Studies have also shown that this drug can cause aplastic anemia, so if you notice symptoms of an aplastic anemia, such as: lassitude, fatigue, pale skin, bleeding in the eye (you'll notice red spot on your eye), bleeding gums, blood spots under the skin or hematoma, immediately stop the treatment and call your doctor.

- In patients with bone marrow diseases.

- In patients with hepatic impairment, especially in those with cholestatic hepatitis. So far,
around 30 cases of Methimazole-induced liver injury (of which 19 cases was related to cholestatic hepatitis) were reported.\textsuperscript{3} If you are experiencing symptoms of a cholestatic hepatitis, such as: dark urine, itching, yellow sclera discoloration or abdominal discomfort, immediately contact your doctor.

- In patients with systemic lupus erythematosus. There have been reports of Methimazole-induced lupus erythematosus.\textsuperscript{4}

### Methimazole, pregnancy and breastfeeding

#### What research says?

It is recommended to use propylthiouracil (PTU) for the treatment of hyperthyroidism during the first trimester of pregnancy, because the use of Methimazole during the first trimester of pregnancy is associated with an increased risk of teratogenic effects. In the second and third trimester of pregnancy PTU should be replaced with Methimazole because Methimazole is safer for hyperthyroidism treatment than PTU from 3-9 month of pregnancy.\textsuperscript{5,6} Methimazole passes the placenta and reaches the fetus and causes cretinism and other adverse effects on the fetus.

#### What FDA recommends?

According to the FDA, Methimazole belongs to the group D - group of medicines that have been proven to be teratogenic and whose use during pregnancy should be avoided.

#### Breastfeeding

The risk is minimal for infants, therefore women can breastfeed their babies while using this medication. Studies have shown that the benefits of breastfeeding outweigh the risk that exists for infants.\textsuperscript{7}

#### Dosage

**Initial dose:** 5-10 mg three times a day. Initial dose for the treatment of severe forms of hyperthyroidism may be increased up to 20 mg three times a day.

**Maintenance dose:** 5 mg one to three times a day.

The maximum daily dose is 60 mg.

**Dosage in children**

**Initial dose:** 0.4 mg / kg of body weight, divided into three doses.

**Maintenance dose:** 0.2 mg / kg body weight, divided into three doses.

The maximum daily dose for children is 30 mg.

Take the pill with a little water, independently of meals.
Interactions

Methimazole should not be used concomitantly with the following medications:

- Drugs used in the treatment of rheumatoid arthritis and multiple sclerosis, such as: leflunomide and teriflunomide. These drugs can damage the liver, just as Methimazole, and concomitant use significantly increases the risk of liver damage.
- Cholesterol-lowering medications, such as: lomitapid and mipomersen. These drugs can damage the liver, so concomitant use with Methimazole is not recommended.
- Deferiprone - a drug used to treat thalassemia major. This drug can cause agranulocytosis, just as Methimazole, and concomitant use significantly increases the risk of this adverse effect.
- Fluphenazine - a drug used to treat manic-bipolar disorders and schizophrenia. This drug can cause agranulocytosis, and concomitant use with Methimazole is not recommended.
- Clozapine - an antipsychotic. Concomitant use with Methimazole increases the risk of side effects.

Side effects

Methimazole may cause the following side effects:

- Cholestatic hepatitis
- Aplastic anemia
- Agranulocytosis
- Lymphadenopathy
- Taste or smell disturbance
- Neuritis
- Polyneuropathy
- Swelling of the salivary glands
- Myalgia
- Arthralgia

References

1. NCBI link 1
2. NCBI link 2
3. NCBI link 3
4. NCBI link 4
5. NCBI link 5
6. NCBI link 6
7. NCBI link 7