# Propylthiouracil (PTU) and Methimazole (MMI)

Propylthiouracil (PTU) and methimazole (MMI) are two commonly used medications in patients with hyperthyroidism. Both drugs block the action of thyroid peroxidase, thus inhibiting thyroid hormone synthesis. Additionally, propylthiouracil has peripheral activity, blocking conversion of T4 to the more active form T3. Side effects of these medications include agranulocytosis and skin rash. PTU may cause hepatotoxicity, while methimazole is a possible teratogen.




PLAY PICMONIC

## Indications

**Hyperthyroidism**
Hiker-thigh-droid
Propylthiouracil and methimazole are indicated for use in patients with hyperthyroidism. These drugs inhibit thyroid hormone synthesis, helping to alleviate symptoms in patients.

## Mechanism

**Inhibits Thyroid Peroxidase**
Inhibit-chains on Thyroid with Oxygen
Propylthiouracil and Methimazole both work to block thyroid peroxidase, an enzyme which aids in the oxidation of iodide. This interrupts the organification of iodine, which leads to inhibition of thyroid hormone synthesis.

**PTU Blocks Peripheral Conversion of T4 to T3**
PTU Blocking Tea-(4) Fork from becoming Tea-(3) Trees
In contrast to methimazole, propylthiouracil has peripheral activity, where it inhibits the enzyme 5'-deiodinase, which converts T4 to its active form T3. By blocking this peripheral conversion, PTU helps alleviate symptoms of hyperthyroidism.

## Side Effects

**Agranulocytosis**
A-granny-side-toe
A rare side effect of these two medications is agranulocytosis, which is the decrease of white blood cells in the blood. Patients may become more prone to illness, fever and infectious lesions.

**Skin Rash**
Rash
The most common side effect of these medications is skin rash, which can also include hives, pruritis, and pigmentation.

**Hepatotoxicity (PTU)**
Liver with Toxic-green-glow (Beneath PTU)
Propylthiouracil is unique as it can rarely cause fulminant liver failure at any course during treatment, which requires liver transplant.

**Teratogen (MMI)**
Tarantula-gem (With Moth-missile)
Methimazole is linked with a teratogenic effect known as aplasia cutis, which is a congenital focal absence of epidermis. Pregnant patients should be placed on propylthiouracil instead of methimazole, especially in the first trimester of pregnancy.

Sign up for FREE at picmonic.com