IODINE, IODIDE†

potassium iodide†

Pima, SSKI, ThyroSafe, ThyroShield

strong iodine solution

Legal Solution

Classification

Therapeutic: antithyroid agents
Pharmacologic: iodine containing agents

Pregnancy Category D

For more information on potassium iodide as a radiation protectant see Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies at www.fda.gov

Indications

Adjunct with other antithyroid drugs in preparation for thyroidectomy. Treatment of thyrotoxic crisis. Radiation protection following radiation emergencies or administration of radiactive iodine.

Action

Rapidly inhibits the release and synthesis of thyroid hormones. Decreases the vascularity of the thyroid gland. Decreases thyroidal uptake of radioactive iodine following radiation emergencies or administration of radioactive isotopes of iodine. Iodine is a necessary component of thyroid hormone.

Therapeutic Effects:

Control of hyperthyroidism. Decreased bleeding during thyroid surgery. Decreased incidence of thyroid cancer following radiation emergencies.

Pharmacokinetics

Absorption: Converted in the GI tract and enters the circulation as iodine; also absorbed through skin and lungs; may also be obtained via recycling of iodothyronines.

Distribution: Concentrates in the thyroid gland and muscle; also found in skin, skeleton, breasts, and hair. Rapidly crosses the placenta into breast milk.

Metabolism and Excretion: Takes up by the thyroid gland, then eliminated via kidneys, liver, skin, lungs, and amniotic fluid.

Half-life: Unknown.

TIME/ACTION PROFILE (effects on thyroid)

<table>
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<tr>
<th>ROUTE</th>
<th>ONSET</th>
<th>PEAK</th>
<th>DURATION</th>
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<td>PO</td>
<td>24 hr</td>
<td>10–15 days</td>
<td>variable†</td>
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†Radiation protection lasts 24 hr

Contraindications/Precautions

Contraindicated in:

- Hypersensitivity
- Hyperkalemia
- Pulmonary edema
- Impaired renal function.

Use Cautiously in:

- Tuberculosis
- Bronchitis
- Cardiovascular disease
- OB, Pedi:

  - Pregnancy or lactation (although iodine is required during pregnancy, excess amounts may cause thyroid abnormalities in the newborn; excess use during lactation may cause skin rash or thyroid suppression in the infant).

Adverse Reactions/Side Effects

CNS:

- confusion, weakness.

GI:

- GI BLEEDING, diarrhea, nausea, vomiting.

Derm:

- acneiform eruptions.

Endo:

- hypothyroidism, goiter, hyperthyroidism.

F and E:

- hypokalemia.

Neuro:

- tingling.

MS:

- joint pain.

Misc:

- hypersensitivity, iodism.

Interactions

Drug-Drug:

- Use with lithium may cause hypothyroidism.
- antithyroid effect of methimazole and propylthiouracil.
- hyperkalemia may result from combined use with potassium-sparing diuretics, ACE inhibitors, angiotensin II receptor antagonists or potassium supplements.

Route/Dosage

Preparation for Thyroidectomy

PO (Adults and Children):

Strong iodine solution—5–5 drops (0.1–0.3 mL) 3 times daily for 10 days prior to surgery.

Potassium iodide saturated solution (SSKI)—1–5 drops (50–250 mg) 3 times daily for 10 days prior to surgery.

Hyperthyroidism

PO (Adults and Children):

Strong iodine solution—1 mL in water 3 times daily.

Potassium iodide saturated solution (SSKI)—6–10 drops (300–500 mg) 3 times daily.

PO (Infants <1 yr): 3–5 drops (150–250 mg) 3 times daily.
Radiation Protectant to Radioactive Isotopes of Iodine

PO (Adults): 35 mg once daily for 10 days (start 24 hr prior to exposure and continue until risk of exposure has passed or other measures have been implemented).

PO (Children 3–12 yr): 65 mg once daily for 10 days (start 24 hr prior to exposure).

Reduction of Thyroid Cancer after Nuclear Accident

PO (Adults and Children ≥68 kg, including pregnant/lactating women): 130 mg once daily (continue until risk of exposure has passed or other measures have been implemented).

PO (Children 3–18 yr): 65 mg once daily.

PO (Children 1 mo–3 yr): 32.5 mg once daily.

PO (Infants ≤1 mo): 16.25 mg once daily.

NURSING IMPLICATIONS

Assessment

- Assess for signs and symptoms of iodism (metallic taste, stomatitis, skin lesions, cold symptoms, severe GI upset). Report these symptoms promptly.

- Monitor response symptoms of hyperthyroidism (tachycardia, palpitations, nervousness, insomnia, diaphoresis, heat intolerance, tremors, weight loss).

- Monitor for hypersensitivity reaction (rash, pruritus, laryngeal edema, wheezing).

- Lab Test Considerations: Monitor thyroid function before and periodically during therapy. May alter results of radionuclide thyroid imaging and may reduce thyroid uptake of 131I, 123I, and sodium pertechnetate99mTc in thyroid uptake tests.

- Monitor serum potassium levels periodically during therapy.

- Lab Test Considerations: Monitor thyroid stimulating hormone (TSH) and free T4 to monitor development of hypothyroidism. Thyroid hormone therapy should be instituted if hypothyroidism develops.

Potential Nursing Diagnoses

Deficient knowledge, related to medication regimen (Patient/Family Teaching)