

Levothyroxine

Soloxine®, Thyro-Tabs®, Thyro-L®, Thyro-Form®, Synthroid®, Levoxyl®, Unithroid®, Tirosint®, Leventia® or L-thyroxine are other names for this medication.

How Is This Medication Useful?

- Levothyroxine is used to treat pets that don't make enough thyroid hormone.

Are There Conditions or Times When Its Use Might Cause More Harm Than Good?

- Levothyroxine should not be given to animals with heart conditions or those who are producing too much thyroid hormone. It should be introduced carefully in animals with diabetes or Addison's disease. If your pet is diabetic, you may have to adjust the amount of insulin you give after levothyroxine is started.
- Dogs with heart disease are often started at a lower thyroxine dose than other dogs.
- If your animal has any of the above conditions, talk to your veterinarian about the potential risks of using the medication versus the benefits that it might have.

What Side Effects Can Be Seen With Its Use?

- If administered at the correct dose, levothyroxine should not cause any side effects. If too much levothyroxine is given, your pet may experience racing heartbeat, excessive thirst and urination, excessive hunger, excitation and restlessness, panting and nervousness. If your pet shows these signs, you should contact your veterinarian.
- Some species of red-feathered birds may start growing yellow feathers after treatment with levothyroxine.
- Very rarely, dogs can have a severe skin reaction to thyroxine, called erythema multiforme.

How Should It Be Given?

- Thyroxine can be given with or without food, but it will work better if you give it the same way each day, so that can be taken into account when titrating the dose.
- The successful outcome of your animal's treatment with this medication depends upon your commitment and ability to administer it exactly as the veterinarian has prescribed. Please do not skip doses or stop giving the medication. If you have difficulty giving doses consult your veterinarian or pharmacist, who can offer administration techniques or change the dosage form to a type of medication that may be more acceptable to you and your animal.
- If you miss a dose of this medication you should give it as soon as you remember it, but if it is within a few hours of the regularly scheduled dose, wait and give it at the regular time. Do not double a dose.
- Some other drugs can interact with this medication so tell your veterinarian about any drugs or foods that you currently give your animal. Do not give new foods or medications without first asking your veterinarian.
- Dogs and Cats: Dogs usually receive levothyroxine orally once or twice daily. Cats do not usually receive levothyroxine but may receive it for short periods of time to correct overtreatment of hyperthyroidism.
- The following drug interactions have either been reported or are theoretical in humans or animals receiving levothyroxine.

- **Amiodarone:** May decrease the metabolism of T4 to T3, so more levothyroxine is needed.
- **Antacids, Oral:** May reduce levothyroxine absorption; separate doses by 4 hours.
- **Antidepressants, Tricyclic/tetracyclic:** Increased risk for central nervous system stimulation and cardiac arrhythmias.
- **Antidiabetic Agents (insulin, oral agents):** Levothyroxine may decrease requirements for insulin or oral agents.
- **Cholestyramine:** May reduce levothyroxine absorption; separate doses by 4 hours.
- **Corticosteroids (high dose):** Decreased conversion of T4 to T3, increasing need for levothyroxine.

- **Digoxin:** Potential for reduced digoxin levels, and possible need to increase its dose.
- **Ferrous Sulfate:** May reduce levothyroxine absorption; separate doses by 4 hours.
- **High Fiber Diet:** May reduce levothyroxine absorption. Recheck blood levels 2-4 weeks after changing to a higher fiber diet such as W/D, R/D, OM, DCO, etc.
- **Ketamine:** May cause tachycardia and hypertension in dogs taking levothyroxine.
- **Phenobarbital:** Possible increased metabolism of thyroxine; dosage adjustments may be needed.
- **Propylthiouracil:** Decreased conversion of T4 to T3, increasing need for levothyroxine.
- **Rifampin:** Possible increased metabolism of thyroxine; dosage adjustments may be needed.
- **Sertraline:** May increase levothyroxine requirements.
- **Sucralfate:** May reduce levothyroxine absorption; separate doses by 4 hours.
- **Sympathomimetic Agents (epinephrine, norepinephrine, etc.):** Levothyroxine can potentiate effects.
- **Warfarin:** Thyroid hormones increase the catabolism of vitamin K-dependent clotting factors that may increase the anticoagulation effects in patients on warfarin.

The following drugs may have effects on thyroid function tests; your veterinarian will take this into consideration when evaluating test results.

- **Effects on serum T₄:** aminoglutethimide ↓, anabolic steroids/androgens ↓, antithyroid drugs (PTU, methimazole) ↓, L-asparaginase ↓, barbiturates such as phenobarbital ↓, corticosteroids such as prednisone or dexamethasone ↓, danazol ↓, diazepam ↓, estrogens such as Incurin® or DES ↑, fluorouracil ↑, heparin ↓, insulin ↑, lithium carbonate ↓, mitotane (o,p-DDD) or Lysodren® ↓, nitroprusside ↓, phenylbutazone ↓, phenytoin ↓, propranolol ↑, salicylates such as aspirin (large doses) ↓, sulfonamide antibiotics ↓, and sulfonylureas ↓.
- **Effects on serum TSH:** aminoglutethimide ↑, antithyroid drugs (PTU, methimazole) ↑, corticosteroids such as prednisone or dexamethasone ↓, danazol ↓, lithium carbonate ↑, and sulfonamide antibiotics ↑.

What Other Information Is Important About This Medication?

- Levothyroxine should be stored in a tight, light resistant, childproof container away from all children and other household pets. Liquid levothyroxine preparations usually need to be refrigerated.
- If you ever pick up your pet's thyroid medicine at the human pharmacy, your pharmacist may be alarmed at the dose. Dogs take on aver 10x the human dose for this medication, by weight. This is necessary because dogs do not absorb the drug efficiently from the gastrointestinal tract.
- Concerns that various tablet formulations can have substantially different bioavailability in dogs have led to recommendations by some to use "brand name" products for dogs and to not change brands once the patient is stabilized. An oral liquid formulated for dogs, (*Leventa*®) does appear to be absorbed to a greater degree than tablet formulations.
- Levothyroxine is considered safe to give to pregnant and nursing mother dogs.
- Most dogs who take levothyroxine will need to have regular blood tests to make sure the dose does not need to be adjusted over time. Blood samples are taken 1-2 months after starting levothyroxine, and 2 weeks or so after changing the dose, to confirm that the new dose is correct. Blood samples should be taken once yearly, or more often if advised by your veterinarian.
- Most dogs who have low thyroid function need to take levothyroxine for life.

References:

Plumb Veterinary Drug Handbook, 2017