THYROID HORMONE PREPARATIONS

All thyroid hormone preparations are intended to replace your body’s natural thyroid hormone. As a result, they are not “drugs” in the classic sense. Thyroid hormone has a wide variety of effects, including maintaining normal metabolism and a variety of bodily functions (examples include heart rate, muscle tone, and menstruation). A normal thyroid gland releases mostly levothyroxine (or T4), which is then converted to liothyronine (or T3) in the target tissues. T3 is actually the active thyroid hormone.

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name(s)</th>
<th>Strengths (µg)</th>
<th>Usual Doses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levothyroxine (T4)</td>
<td>Levoxyl</td>
<td>25 - 300</td>
<td>25 - 300 µg/day</td>
</tr>
<tr>
<td>Levothyroxine (T4)</td>
<td>Synthroid</td>
<td>25 - 300</td>
<td>25 - 300 µg/day</td>
</tr>
<tr>
<td>Levothyroxine (T4)</td>
<td>Unithroid</td>
<td>25 - 300</td>
<td>25 - 300 µg/day</td>
</tr>
<tr>
<td>Liothyronine (T3)</td>
<td>Cytomel</td>
<td>5, 25, 50</td>
<td>25 – 75 µg/day</td>
</tr>
</tbody>
</table>

**Combination T4/T3 Products**

<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name(s)</th>
<th>Strengths (µg)</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Thyrolar (80% T4 / 20% T3)</td>
<td>Liotrix</td>
<td>12.5/3.1 - 150/37.5</td>
<td>(See above)</td>
</tr>
<tr>
<td>Dessicated Pig Thyroid</td>
<td>Armour</td>
<td>1 Grain = 38 T4 / 9 T3</td>
<td>(See above)</td>
</tr>
</tbody>
</table>

**POTENTIAL USES:**

1) Hypothyroidism
2) Goiter (Enlarged Thyroid Gland)
3) Thyroid Nodules
4) Thyroid Cancer

**CONTRAINDICATIONS:** (Use extreme caution if any of these conditions are present)

1) Adrenal Insufficiency (Addison’s disease, rare disease of the adrenal glands)
2) Active Heart Disease (Ongoing Heart Attack)

**FDA PREGNANCY CATEGORY:** A (Safety well-established using human studies)

**ADVERSE REACTIONS:** Reactions to thyroid hormone preparations are mostly due to problems with dosing. Excess thyroid hormone can lead to symptoms of hyperthyroidism, or an overactive thyroid gland, including (but not limited to):

1) Anxiety, Insomnia
2) Tremors, Palpitations (Heart Fluttering)
3) Weight Loss
4) Heat Intolerance

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Thyroid hormone levels should be carefully monitored in elderly patients, and in patients with active cardiovascular disease and/or cardiac arrhythmias. These patients tend to have more severe reactions to excess thyroid hormone.

**MONITORING REQUIREMENTS**: Levels of Thyroid Stimulating Hormone (TSH) are used to assess the correct dosage of thyroid hormone. TSH levels are usually checked 4-6 weeks after any dosing changes; once stable, yearly TSH testing may be appropriate.

**COMMON QUESTIONS**:

1) *Are generic thyroid hormone preparations equivalent to brand-name pills?*

   The United States Food & Drug Administration (USFDA) has established standards of equivalency for all thyroid hormone preparations. In other words, all of these drugs have *reasonably* reliable dosing. That having been said, there is some evidence that brand-name preparations do contain more precise doses of thyroid hormone. As a result, brand-name drugs have been preferentially endorsed by the American Thyroid Association (ATA) and by the American Association of Clinical Endocrinologists (AACE). The choice between generic and brand-name drugs is an individual one, and depends on several factors, including patient preferences, cost, and prescription drug coverage.

2) *Is “natural” thyroid hormone better than synthetic preparations?*

   Armour Thyroid pills are made from dessicated pig thyroid glands. As a result, some people feel that these pills are more “natural” than synthetic brands such as Synthroid or Levoxyl. In truth, there are no significant differences between the hormones contained in natural and synthetic preparations. Since synthetic preparations are more precisely dosed, they are usually preferred.

3) *Do I need T3 in my pills as well as T4?*

   T4 comprises the majority of thyroid hormone released by normal thyroid glands. T4 is then converted into its active hormone, T3, by enzymes that are present throughout the body. For the vast majority of patients taking thyroid hormone pills, T3 in pill form is not required, since the body can easily convert the T3 it needs. In addition, many doctors believe that the slow production of T3 from T4 is better for the body than pills containing T3.

   Medical evidence that the addition of T3 improves clinical outcomes is weak. However, individual patients may have some degree of success with the addition of T3 preparations. If you are truly concerned, discuss the pros and cons of T3 therapy with your doctor.

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