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# Clinical THYROIDOLOGY



VOLUME 25 • ISSUE 8

AUGUST 2013

Clin Thyroidol 2013;25:166–167.

## Thyroid Health Supplements Contain Significant Amounts of Thyroid Hormones

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Kang G, Parks JR, Bader F, Chang A, Maged AR, Burch HB, Bernet V.  
Thyroxine and triiodothyronine content in commercially available thyroid  
health supplements. Thyroid. June 13, 2013 [Epub ahead of print].

### SUMMARY

#### Background

Dietary supplements are widely used in the United States. The Dietary Supplement Health and Education Act of 1997 defined supplements as separate from drugs and made them exempt from FDA regulation. A number of dietary health supplements are marketed for “thyroid support.” The purpose of this study was to determine the thyroid hormone content of some of these supplements.

#### Methods

Ten thyroid health supplements were purchased from stores or through the Internet. Five of them were herbal supplements with no indication on the label that they contained thyroid hormone; the labels of the other five stated that they contained raw thyroid tissue or powder from a bovine source.

The supplements were analyzed for their T<sub>4</sub> and T<sub>3</sub> content by dissolving them in a suitable solvent and measuring the T<sub>4</sub> and T<sub>3</sub> content by high-performance liquid chromatography.

#### Results

Nine of the ten products contained detectable amounts of T<sub>3</sub> ranging from 1.3 to 25.4 µg per tablet. Five products contained detectable amounts of T<sub>4</sub> ranging from <0.5 to 22.9 µg per tablet, and 4 of these 5 also contained T<sub>3</sub>. Four of the five products containing bovine extract contained T<sub>3</sub>, and two of them also contained T<sub>4</sub>; one contained neither hormone. All of the herbal capsules contained T<sub>3</sub>, and two also contained T<sub>4</sub>. The herbal capsules contained 100 to 240 µg of iodine per capsule and 150 to 1000 mg of tyrosine per capsule. For

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one herbal product, the recommended dose of four capsules daily would provide 92  $\mu\text{g}$  of  $\text{T}_4$  and 17  $\mu\text{g}$  of  $\text{T}_3$ , and for another, the recommended dose would provide 32  $\mu\text{g}$  of  $\text{T}_3$ . One capsule daily of one product with the bovine extract would provide 9  $\mu\text{g}$  of  $\text{T}_4$  and 25  $\mu\text{g}$  of  $\text{T}_3$ , whereas the others contained 0 to 9  $\mu\text{g}$  of  $\text{T}_4$  and 1 to 4  $\mu\text{g}$  of  $\text{T}_3$ .

### Conclusions

The majority of dietary thyroid supplements contained clinically significant amounts of  $\text{T}_3$  and  $\text{T}_4$ . This could potentially expose patients to the risk of altering thyroid-function tests and could even cause thyrotoxicosis.

### ANALYSIS AND COMMENTARY ● ● ● ● ●

This well-designed study is very relevant to the practice of endocrinology in the United States. Thyroid supplements are marketed to support thyroid function, improve energy, or promote weight loss. There have been a number of case reports and even small series of cases of thyrotoxicosis related to taking such products (1). Many years ago, my colleagues and I reported five patients with thyrotoxicosis caused by taking a weight loss product sold through the mail that contained 9  $\mu\text{g}$  of  $\text{T}_3$  and 84  $\mu\text{g}$  of  $\text{T}_4$  per capsule (2).

The high iodine content of herbal thyroid supplements

could improve thyroid function in some patients with Graves' disease or, conversely, they could trigger hyperthyroidism in patients with multinodular goiter or cause hypothyroidism in euthyroid patients with Hashimoto's thyroiditis.

The authors of the study point out that a weakness in their study is the lack of measurements of thyroid function in patients taking these products. Of course, a sequel to this article could address that issue. The data in this article make it clear that it is important to ask our patients whether they are taking thyroid supplements, especially those patients with peculiar results on thyroid-function tests.

### References

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