

# Mills and Bone Academy

Educational Article

## Herbs for Low Thyroid Function: Recent Developments – Kerry Bone

For many years there has been a dearth of clinical information about herbs that can boost the function of a sluggish thyroid gland. Such herbs would be relevant in cases of obesity, subclinical hypothyroidism (an elevated TSH value (on at least 2 occasions) with normal thyroid (T4) hormone levels), and even the early stages of overt hypothyroidism and Hashimoto's thyroiditis, while there is still some functioning thyroid gland remaining. For example, a recent review of Chinese herbal medicines (CHM) searched The Cochrane Library, MEDLINE, EMBASE, the Chinese Biomedical Literature Database on Disc, and the China National Knowledge Infrastructure for randomised clinical trials (RCTs). The date of the last search was September 2014 for all databases. Based on this extensive searching, the authors concluded there was no evidence available from RCTs on CHM for the treatment of hypothyroidism.<sup>i</sup> They also did not find any ongoing registered trial.

Considering one case report of *Withania*-associated thyrotoxicosis, and preclinical studies showing marked increases in thyroid hormone levels, a group of US scientists revisited the results of a clinical study of *Withania* (*Withania somnifera*) in bipolar

patients to understand any impact on thyroid function.<sup>ii</sup> As thyroid indices were done for safety, and not the primary goal of the original study, only a small fraction of trial participants exhibited abnormal thyroid readings. Ten (of the original 60) patients showed abnormal results in one of the thyroid measures (TSH, free T4 and T3) either at the beginning or end of the 8-week study. Since there was no sub-stratification for treatment assignment by thyroid status, unequal numbers of patients received *Withania* (n = 3) or placebo (n = 7). One *Withania*-treated patient had subclinical hypothyroidism (TSH 5.7 mIU/L) at baseline that normalised, and all three *Withania*-treated patients experienced T4 increases from baseline (7%, 12%, and 24%). Six of seven placebo-assigned patients showed decreases in T4 from baseline (4% to 23%), and one patient's TSH moved from normal to the subclinical hypothyroid range (6.96 mIU/L). The authors concluded that in spite of the limitations, the subtle laboratory changes noted in thyroid indices in this 8-week study suggest that *Withania* may increase thyroxine levels, and therefore vigilance regarding hyperthyroidism may be warranted. Nonetheless, the thyroid-enhancing properties of *Withania* would also represent a clinical opportunity for the

treatment of subclinical hypothyroidism, and these results suggested the need for further study.

Details of the case report mentioned above are as follows. A 32-year-old woman developed symptoms of thyrotoxicosis (weight loss, palpitations, confusion) while taking capsules containing Withania for symptoms of chronic fatigue.<sup>iii</sup> She was reportedly not taking any other treatments and her TSH was tested at < 0.01 mIU/L and serum thyroxine at 33.9 pmol/L. All symptoms and abnormal laboratory values resolved spontaneously after discontinuing the herb. The reported dose was 500 mg/day of Withania, possibly of a dry extract.

Despite this case report, the above study in bipolar patients did not see any adverse impact of Withania on normal thyroid function. Of the remaining patients who had normal thyroid laboratory readings, there was no significant difference between the Withania and placebo groups for TSH, T3 and T4 by the conclusion of the study.

Interestingly, there has also been a case report for celery inducing hyperthyroidism. A 48-year-old man, with no history of any thyroid diseases, was diagnosed with hyperthyroidism due to daily consumption of 4 g of dried celery leaves for 45 days. After cessation of consumption and treatment with methimazole, the symptoms remitted. Drug medication was discontinued when the lab tests and ultrasound were normal and indicated the patient's definite recovery. In two months follow-up, he was normal and thyroid-stimulating hormone (TSH), T4, T3, anti-TSH receptor, anti thyroperoxidase and antithyroglobulin were in normal

ranges.<sup>iv</sup> Perhaps celery also has clinical potential for a low functioning thyroid gland?

Now in the past two years there have been two RCTs of commonly used herbs in patients with hypothyroidism. The most recent trial looked at Withania, which is often prescribed for thyroid dysfunction in India. Presumably the above reports also stimulated interest in examining this herb further. A pilot study was initiated to evaluate the efficacy and safety of Withania root extract (600 mg daily) in subclinical hypothyroid patients. Fifty people with elevated serum TSH levels (4.5-10  $\mu$ IU/L) aged between 18 and 50 were randomised to either treatment (n = 25) or placebo (n = 25) groups for an 8-week treatment period. A total of four participants (two from each group) withdrew their consent before the second visit. Eight weeks of treatment with Withania improved serum TSH (p < 0.001), T3 (p = 0.0031), and T4 (p = 0.0096) levels significantly compared to placebo. Four people (8%) out of 50 reported few mild and temporary adverse effects during this study.<sup>v</sup>

Finally, and perhaps a surprising result (although this herb is so versatile it might not actually be so amazing), the seeds of *Nigella sativa* have shown a benefit in a 2016-published RCT.<sup>vi</sup> The aim of the study was to evaluate the effects of Nigella on thyroid function, serum vascular endothelial growth factor (VEGF) - 1, nesfatin-1 (a neuropeptide produced in the hypothalamus that participates in the regulation of hunger and fat storage) and anthropometric features in patients with Hashimoto's thyroiditis. Forty patients with Hashimoto's thyroiditis, aged between 22 and 50 years old, participated in the trial and were randomly allocated into two groups of intervention and control, receiving powdered Nigella seed (2 g/day) or placebo daily for 8 weeks.

Treatment with Nigella significantly reduced body weight and body mass index (BMI). Serum concentrations of TSH and anti-thyroid peroxidase (anti-TPO) antibodies decreased, while serum T3 concentrations increased in the Nigella-treated group after 8 weeks. There was a significant reduction in serum VEGF concentrations in intervention group. None of these changes had been observed in placebo treated group. In stepwise multiple regression model, changes in waist to hip ratio (WHR) and thyroid hormones were significant predictors of changes in serum VEGF and nesfatin-1 values in Nigella sativa treated group (P < 0.05). Quite a stunning result that opens new therapeutic ground for this important medicinal plant!

## References

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