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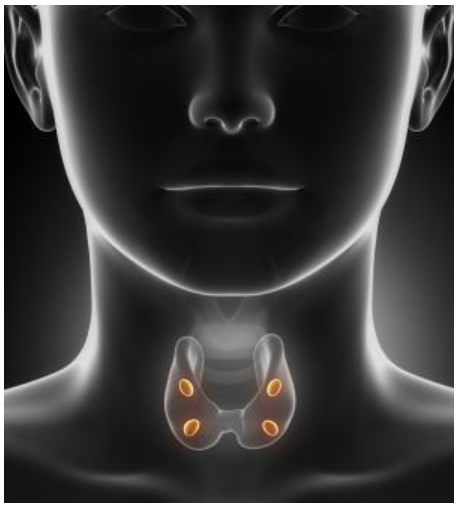
The Wonder Antioxidant for Thyroid Health



Scientific reports have revealed the crucial role that **Selenium** plays in the maintenance of **immune-endocrine function**, metabolism and **cellular homeostasis**. The thyroid gland is characterised by a high concentration of selenium. In the thyroid, selenium is required for **antioxidant function** and the **metabolism of thyroid hormones**. Selenoproteins contribute to antioxidant defence in the thyroid by removing oxygen free radicals generated during the production of thyroid hormones.

A review of literature on selenium's role in thyroid function has shown that excessive or inadequate intake is associated with autoimmune disorders. Maintaining a physiological concentration of selenium through diet or supplementation is essential to prevent thyroid disease and promote wellbeing.

InterClinical Update

Selenium and Thyroid Disease:

From Pathophysiology to Treatment

The role of selenium in thyroid function began to be questioned because of a condition known as myxedematous endemic cretinism, which was characterised by a deficit of selenium and iodine. It was found that selenium deficiency decreases the synthesis of thyroid hormones, as it reduces the function of selenoproteins, in particular iodothyronine deiodinases (DIOs) which are responsible for the conversion of T4 to T3. This leads to the stimulation of the hypothalamic-pituitary axis due to the lack of negative feedback control, thus increasing TSH production. Consequently, hydrogen peroxide is not adequately removed by glutathione peroxidases and accumulates in the thyroid tissue causing thyrocyte damage.

Several studies have focused on the importance of selenium in thyroid function and autoimmune processes, aiming at understanding the impact that supplementation may have. Gartner et al. evaluated the effect of supplementing diet with 200µg sodium selenite per day in patients with autoimmune thyroiditis over 90 days. The subjects were divided into two groups; one group was supplemented with sodium selenite and the other kept therapy with levothyroxine. The results showed that the concentration of antithyroidperoxidase and antithyroglobulin antibodies (TPOAb and TgAb) decreased by 40% in the group treated with selenium. Thyroid echogenicity also improved.

Turker et al. evaluated the effects of long term (9 months) supplementation with variable doses of selenomethionine (100/200µg per day) on autoimmune thyroiditis in 88 female patients. The authors concluded that replacement with selenomethionine suppresses serum concentrations of TPOAb, but required doses greater than 100µg a day to maximize glutathione peroxidase activity.

In pregnancy, supplementation of selenium may be a beneficial influence on thyroid function. Negro et al. recruited 2143 pregnant women with autoimmune thyroiditis to evaluate the effect of selenium supplementation, during and after pregnancy. The authors found that there was a decrease in the progression of autoimmune thyroiditis during pregnancy and the postpartum period. They observed a reduction in TPOAb levels, improved thyroid echogenicity, decreased incidence of thyroid dysfunction in the postpartum period and decreased permanent hypothyroidism.

Several groups have analysed the importance of selenium supplementation in Graves' disease patients. Vrca et al. evaluated the effect of supplementation with a fixed combination of antioxidants (Vitamins C and E, beta-carotene, and selenium) on the speed of attaining euthyroidism in a group of Graves' disease patients treated with methimazole. The results showed that the antioxidant group attained euthyroidism faster than the group treated with methimazole only.

Selenium has a U-shaped relationship with disease; either deficiency or excess of this micronutrient may be associated with adverse outcomes. Supplementation to maintain physiological concentrations of selenium may be beneficial in the treatment of thyroid disorders.

Comment:

Hair provides important information that can assist with early diagnosis of physiological disorders. Hair Tissue Mineral Analysis (HTMA) is a safe and non-invasive pathology test. It measures the levels and comparative rations of nutrient and toxic minerals found in the hair. HTMA is regarded by many doctors, naturopaths and nutritional therapists as one of the most valuable screening tools available in everyday and preventative health care. HTMA may help with the discovery of selenium imbalances.

REFERENCE:

Mara, V, Miguel, M, & Francisco, C 2017, 'Selenium and Thyroid Disease: From Pathophysiology to Treatment', International Journal Of Endocrinology, Vol 2017 (2017), Directory of Open Access Journals.

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