CanAlt
Health Laboratories

RELATION BETWEEN IODINE AND SELENIUM

Iodine is regulated in many ways in the thyroid. However, the most important pathway is the conversion of iodide into iodine through an oxidation reaction.

This requires an enzyme called TPO or thyroperoxidase. It also requires hydrogen peroxide. If too much hydrogen peroxide is left in the thyroid, however, it leads to Hashimoto's disease, a common thyroid problem.

The mineral that helps control hydrogen peroxide is selenium. It is needed to make glutathione peroxidase, whose function, among many others, is to detoxify hydrogen peroxide after it has done its job in the thyroid gland.

Selenium is also required later in the metabolism of the thyroid hormone in the conversion of the relatively inactive T4 to the active thyroid hormone T3. The enzyme primarily responsible for this conversion is iodothyronine deiodinase. This enzyme also requires selenium to function properly.

Any deficiency of selenium in the body will impair T3 production and thus cause hypothyroidism symptoms, even if the body is producing plenty of T4. This is sometimes called a conversion problem, as opposed to an iodine deficiency problem.

Thus selenium is critical for two phases of thyroid hormone production. It is thus considered a close relative to iodine in the correction of thyroid difficulties.