

Foods-Associated Thyroid Dysfunction

Cheepsattayakorn A^{1*}, Cheepsattayakorn R²

¹ 10th Zonal Tuberculosis and Chest Disease Center, Chiang Mai, Thailand.

² Department of Pathology, Faculty of Medicine, Chiang Mai University, Chiang Mai, Thailand.

*Corresponding Author:

Attapon Cheepsattayakorn,
 10th Zonal Tuberculosis and Chest Disease Center, 143 Sridornchai Road Changklan Muang Chiang Mai 50100 Thailand.
 Tel: 66 53 140767/66 53 276364
 Fax: 66 53 140773/66 53 273590
 Email: Attapon1958@gmail.com

Received: January 11, 2020

Published: January 21, 2020

Copyright: ©2020 Attapon Cheepsattayakorn. This is an Open Access article published and distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

The global prevalence of thyroid disorders is not clear in different populations and areas. Hyperthyroidism, hypothyroidism, Hashimoto's thyroiditis, goiter and other iodine deficiency disorders, and thyroid cancer. The anterior pituitary gland controls the production of thyroxine (T₄), tri-iodothyronine (T₃), and calcitonin that are produced by the thyroid gland. Goitrogens and thyroid auto-immunity are likely to play critical role in the cause of goiter. Environmental triggers that are based on animal and human studies contribute to about 20-30 % of its causes, whereas the rest of 70-80% is due to genetic predisposition. Some previous studies demonstrated that iodinated salt, preservatives, iodine additives to bread or flour, medicines (Lugol's Iodine, topical antiseptics, vitamins, amiodarone, etc.), iodine-laden foods, kelp seaweed, and contrast media or dyes may be starting point of thyroid dysfunction due to more immunogenicity of highly iodinated thyroglobulin compared to poorly iodinated ones. Nevertheless, iodine may have a direct toxic effect on thyroid tissues via immune stimulation and free oxygen radicals. Cauliflower, broccoli, soy-enriched foods, turnip, legumes, lithium, forms of root cassava, amiodarone, plants can aggravate thyroid problems by reducing T₄ absorption and thyroid-hormone action interference are demonstrated increasing incidence of auto-immune thyroid disease. In a previous animal study demonstrated that free and total thyroxine levels were higher in saturated-fat-fed group than controls, whereas T₃ and thyroid peroxidase levels were decreased in rats fed on monounsaturated fats. PUFA n-6 demonstrated involvement in stimulation of thyroid activity as well as significant thyroid dysfunction due to dietary high-fat lard intake.

Dietary green tea extract was shown decreasing serum T₃ and T₄ and increasing serum thyroid-stimulating hormone levels as well as decreasing thyroid peroxidase and deiodinase activity in rats. Flavonoids and catechins in green tea also demonstrated reducing thyroid peroxidase (TPO) and 5'-deiodinase enzyme activity. Previous studies revealed significant suppression in plasma-bound I₁₃₁ in adults while receiving soybean product. Nevertheless,

several previous studies demonstrated that isoflavones and soya protein did not affect normal thyroid function in persons with sufficient iodine intake, but they might interfere with absorption of thyroid hormone increasing the dose of medication patients with hypothyroidism. Raw, cooked and boiled extracts of various cyanogenic plant foods (mustard, turnip, bamboo shoot, cabbage, cauliflower, cassava, radish) revealed TPO activity. Highest anti-TPO potency, followed by cooked and raw extracts of these cyanotic plant foods. Cooking destroys the enzyme responsible for activation of progoitrin to goitrin, an active goitrogen present in plants of turnip, Brassicaceae, and Rutabaga including groundnuts (containing active principle arachidoid), thus inactivates its anti-thyroidal potency. People who consume considerable quantities of goitrogenic foods may lead to goiter development. Millet brand fraction (containing thyroid slices of pork, having maximum concentration of C-glycosylflavones) demonstrated anti-TPO activity (anti-thyroid effect). Autoimmune thyroiditis is also induced by vitamin B₁₂ deficiency and selenium deficiency. Hyperthyroidism caused by excessive consumption of sausages and thyrotoxicosis outbreak caused by excessive consumption of bovine thyroid gland in ground beef were also reported.

In conclusion, procedures, such as cooking, boiling, washing, and soaking can assist in decreasing the goitrogenic potency of plants or foods with goitrogenic potency that depends upon the amount of its presenting active goitrogen.

Submit your manuscript at

<https://www.enlivenarchive.org/online-submission.php>

New initiative of Enliven Archive

Apart from providing HTML, PDF versions; we also provide **video version** and deposit the videos in about 15 freely accessible social network sites that promote videos which in turn will aid in rapid circulation of articles published with us.