

LOW THYROID FUNCTION AND AGEING

Abstract

The high frequency of thyroid disease in elderly patients, previously unrecognized, often leads to subclinical hypothyroidism due to decreased hypothalamic stimulus or to increased prevalence of *autoimmune thyroiditis*. Thyroid auto-antibodies affect primarily the two main thyroid proteins.

The scaffold protein **thyroglobulin** enables thyroid hormonogenesis and then becomes a storage protein for both thyroid hormones and iodide. The enzyme **thyroperoxidase** plays the major role in thyroid hormones biosynthesis, responsible for both the iodination and the coupling of tyrosine residues in thyroglobulin which generate T4 (**thyroxine**) and T3 (**triiodothyronine**).

Thyroid hormonogenesis may be impaired by xenobiotics (**dioxins**, polychlorinated biphenyls - **PCBs**, polycyclic aromatic hydrocarbons - **PAHs**) exposing populations to higher prevalence of thyroid antibodies. The prohormone T4 is transformed into T3 by the enzyme **5'-deiodinase**. Heavy metals (**mercury, lead, cadmium**) impair its activity and may induce hypothyroidism.

Though the prevalence of thyroid auto antibodies steadily increases throughout the decades, this doesn't occur after the ninth decade, leading to the concept of "**healthy centenarians**".