

# EFFECT OF IODINE AND SELENIUM UPON THYROID FUNCTION

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## SUMMARY

Iodine is an essential element with unique role in organism: it is indispensable component of thyroid hormones. After binding with specific nuclear receptor, T3/T4 induce transcription of genetic code via mRNA and regulate proteosynthesis in most tissues. Thyroid hormones regulate rate of metabolic processes and consequently development of organism.

Czech Republic was in past typical region with moderate to severe iodine deficiency. Therefore epidemiological survey was started in randomly selected samples of peoples. Thereafter a complex program of improving iodine supply was realized. Prompt effects of this changes were recorded, namely increase of ioduria and decrease of thyroid volume.

Essential trace element selenium has a fundamental importance to the cell and body metabolism regulation by thyroid hormones. Activities of selenoenzymes deiodinases lead to the activation of prohormon T4 to active hormone T3 and the inactivation of T3 and of T4, as well.

There is unfortunately moderate to mild Se deficit in the CR. Average serum Se concentrations for the populations from 6 to 65 years are in the regions of the CR between 42 and 62 g/l and urine Se values are between 8 and 15 g/l. We have found statistically significant correlations among indexes of selenium status and indexes of thyroid hormone metabolism and function. Especially dangerous are concomitant deficiencies of both key elements for thyroid hormone metabolism - I and Se - from the point of thyroid hormone regulative functions.

*Key words:* iodine, selenium, thyroid gland, thyroid hormones, saturation, epidemiology

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