Selenium and iodine interactions with thyroid status
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Background: The adequacy of selenium (Se) status may influence iodine metabolism because of Se’s role in the deiodinase enzymes. Se deficiency may exacerbate symptoms of iodine deficiency. There is little research on any detrimental effects of marginal selenium intakes on thyroid status.

Objective: This paper reports on two studies investigating (a) the relationship between Se status and thyroid status in a NZ population and (b) the effect of Se supplementation on TSH and the ratio of T$_3$/T$_4$.

Design: Study 1: Plasma Se was determined in 199 Otago residents for which data was available on thyroid volume, plasma TSH, and plasma T$_4$. Study 2: TSH, T$_4$ and T$_3$ were measured in plasma from two supplementation studies: 57 smokers who received 100 µg Se or a placebo daily as selenomethionine; 172 subjects who received 200 µg daily as high-Se yeast (Precise) or a placebo.

Outcomes: Study 1: In contrast to observations in France (1), preliminary analyses did not show significant associations between plasma Se and measures of thyroid status. Study 2: Se supplementation resulted in a trend towards lower T$_4$ confirming an earlier study of a small but significant fall in T$_4$(2).

Conclusions: Lack of association between plasma Se and thyroid status, and non-significant changes in T$_4$ suggest that Se status in NZ is adequate for optimal activity of the deiodinases