Impact of flavonoids on thyroid function

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Abstract
Flavonoids are polyphenolic compounds of natural occurrence produced by plants that are largely consumed both for therapeutic purposes and as food. Experimental data have shown that many flavonoids could inhibit thyroperoxidase activity, decreasing thyroid hormones levels thus increasing TSH and causing goiter. In humans, infants fed with soy formula have been shown to develop goiter. However, in post-menopausal women soy intake did not affect thyroid function. In thyroid tumor cell line, flavonoids were shown to inhibit cell growth, but they can also decrease radioiodine uptake. The efficacy of radioiodine therapy. Flavonoids could also affect the availability of thyroid hormones to target tissues, by inhibiting deiodinase activity or displacing T4 from transthyretin. Thus, flavonoids have been shown to interfere with many aspects of the thyroid hormones synthesis and availability in in vivo and in vitro models. In the present article, we review and synthesize the literature on the effects of flavonoids on thyroid and discuss the possible relevance of these effects for humans.

Highlights
• Many flavonoids could inhibit thyroperoxidase activity, potentially leading to goiter. • Flavonoids are capable to inhibit thyroid tumor cell line growth, but they can also decrease radioiodine uptake. • The availability of thyroid hormones to target tissues could also be affected by flavonoids. • Predisposing factors might contribute to a possible deleterious effect of flavonoids on thyroid function.

Keywords
Flavonoids; Thyroid; Thyroperoxidase; Sodium/iodide symporter; Deiodinase

Abbreviations
TPO, thyroperoxidase; NIS, sodium/iodide symporter

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