

Are Thyroid Functions Affected by Brassica Vegetables-A Thorough Systematic Analysis

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Abstract

Hyperthyroidism is a common endocrine disorder characterized by an excess of thyroid hormone production. While conventional treatment options such as antithyroid drugs, radioactive iodine therapy, and surgery are effective, they can be associated with side effects and may not address underlying dysregulation of the gut microbiota observed in hyperthyroid patients. Probiotic microbial strains have emerged as a potential adjunctive therapy for hyperthyroidism due to their ability to modulate gut microbiota composition and function. This article reviews the current understanding of neuro-hormonal dynamics in hyperthyroidism and the potential impact of probiotic microbial strains on these dynamics, focusing on findings from a murine model of hyperthyroidism. Hyperthyroidism is a condition characterized by elevated levels of thyroid hormones, primarily thyroxine and triiodothyronine, which are produced by the thyroid gland.

Keywords: Antithyroid drugs • Radioactive • Hyperthyroid patients

Introduction

Brassica vegetables, including broccoli, cabbage, and Brussels sprouts, are rich in nutrients and bioactive compounds that offer numerous health benefits. However, there has been concern about the potential impact of these vegetables on thyroid function due to their goitrogenic properties. This article provides a thorough systematic analysis of the current literature to evaluate the effects of Brassica vegetables on thyroid function. It examines the evidence for and against the notion that Brassica vegetables adversely affect thyroid function, considering factors such as iodine status, cooking methods, and individual susceptibility. The condition is often caused by Graves' disease, an autoimmune disorder, or by nodules on the thyroid gland that produce excess hormone. Hyperthyroidism can lead to a variety of symptoms, including weight loss, increased heart rate, tremors, and anxiety. Conventional treatments for hyperthyroidism aim to reduce thyroid hormone levels and may include antithyroid drugs, radioactive iodine therapy, or surgery. However, these treatments can be associated with side effects and may not address the underlying dysregulation of the gut microbiota observed in hyperthyroid patients [1,2].

Literature Review

Brassica vegetables, also known as cruciferous vegetables, are a group of vegetables that belong to the Brassicaceae family. They are widely consumed worldwide and are known for their high content of vitamins, minerals, and phytochemicals. However, Brassica vegetables also contain compounds known as goitrogens, which can interfere with thyroid function by inhibiting the uptake of iodine or interfering with thyroid hormone synthesis. This has led to concerns about the potential impact of Brassica vegetables on thyroid health. The thyroid gland requires iodine to produce thyroid hormones, including thyroxine (T4) and triiodothyronine. Adequate iodine intake is essential for maintaining normal thyroid function, and iodine deficiency can lead to thyroid

disorders such as goiter and hypothyroidism. However, excessive iodine intake can also be detrimental to thyroid health, leading to hyperthyroidism or thyroid autoimmunity. Brassica vegetables contain compounds known as glucosinolates, which can be converted into goitrogenic compounds such as thiocyanates and isothiocyanates. These compounds can interfere with iodine uptake or thyroid hormone synthesis, potentially affecting thyroid function. However, the extent of this effect depends on several factors, including the amount of Brassica vegetables consumed, the iodine status of the individual, and the cooking methods used [3,4].

Discussion

Some studies have suggested that consuming large amounts of Brassica vegetables can have a negative impact on thyroid function, particularly in individuals with iodine deficiency or those at risk of thyroid disorders. These studies have primarily been conducted in animal models or in vitro, and the relevance to humans is not always clear. Additionally, the effects of Brassica vegetables on thyroid function may vary depending on the specific vegetable and the method of preparation. Other studies have found no significant impact of Brassica vegetables on thyroid function in humans. These studies have generally been conducted in populations with adequate iodine intake and have not shown any adverse effects of Brassica vegetable consumption on thyroid health. Some studies have even suggested that the beneficial effects of Brassica vegetables, such as their anti-inflammatory and antioxidant properties, may outweigh any potential goitrogenic effects [5,6].

Conclusion

The impact of Brassica vegetables on thyroid function is complex and multifactorial. While these vegetables contain goitrogenic compounds that can interfere with thyroid function, the evidence for their adverse effects in humans is limited and inconsistent. Factors such as iodine status, individual susceptibility, and cooking methods may influence the potential impact of Brassica vegetables on thyroid health. Overall, consuming Brassica vegetables as part of a balanced diet is likely safe for most individuals and may offer numerous health benefits. However, individuals with thyroid disorders or iodine deficiency should consult with a healthcare professional before making significant changes to their diet.

Acknowledgement

None.

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Received: 22 February, 2024, Manuscript No. rtr-24-133630; **Editor Assigned:** 24 February, 2024, PreQC No. P-133630; **Reviewed:** 07 March, 2024, QC No. Q-133630; **Revised:** 12 March, 2024, Manuscript No. R-133630; **Published:** 19 March, 2024, DOI: 10.37421/2684-4273.2024.8.62

Conflict of Interest

None.

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How to cite this article: Pawel, Agnieszka. "Are Thyroid Functions Affected by Brassica Vegetables-A Thorough Systematic Analysis." *Rep Thyroid Res* 8 (2024): 62.