

Review Paper: PureSea® seaweed and Endometriosis

Summary

Endometriosis is a chronic disorder that largely impacts women of childbearing age. The symptoms are broad and cause various issues for those affected. Nutrition is an overlooked, but highly impactful way to address the symptoms. Iodine specifically, which already most women are deficient in, is an essential nutrient for normal thyroid function. When the thyroid is underactive through insufficient iodine intake, there is a higher prevalence of Endometriosis.

By using PureSea® seaweed as a natural iodine source in food and nutrition products, the nutrition required to support women's health and symptoms of endometriosis can be delivered in a safe, natural way, and with EFSA approved health claims.

Abstract

Endometriosis is a chronic, inflammatory disorder that occurs in women when tissue similar to the lining of the womb, starts to grow in other places like the ovaries and fallopian tubes. This tissue acts like endometrial tissue and thickens, breaks down and bleeds with each menstrual cycle. But, unlike a normal period, this tissue has no way to exit the body, which can lead to cysts and scar tissue forming in the pelvic area. Recent research suggests that nutritional factors, including iodine, may influence the pathophysiology of endometriosis. This paper explores the relationship between iodine deficiency, its role in thyroid function, and the potential implications for endometriosis.

Introduction

It is estimated that approximately 10% of women between 14 and 45 have endometriosis and it goes largely undiagnosed in younger years. This leads to significant physical, emotional, and economic challenges¹. It can also be difficult to get pregnant and this is why more women are diagnosed in their 30's. Over time, women with endometriosis can also suffer with chronic lower back and pelvic pain, pain during and after sex, an overactive bladder, intestinal pain, and painful bowel movements.

Endometriosis is characterised by a state of chronic inflammation, which is influenced by various dietary factors. Inflammation plays a crucial role in the pathogenesis of endometriosis, affecting immune response and tissue remodelling. Nutritional components, including micronutrients, can modulate inflammatory pathways.

Despite its prevalence, the etiology of endometriosis remains poorly understood. Hormonal, genetic, and environmental factors have been implicated, with increasing attention on the role of nutritionⁱⁱ. Iodine, an essential micronutrient, is crucial for thyroid hormone synthesis, which regulates numerous bodily functions, including reproductive health.

Iodine and Thyroid Function

Iodine is vital for the production of thyroid hormones, which play a key role in metabolism, growth, and development. Thyroid hormones (T3 and T4) influence reproductive hormone levels, and their deficiency can lead to hypothyroidism, which is associated with menstrual irregularities and fertility issuesⁱⁱⁱ. A study noted that women with hypothyroidism had a higher prevalence of endometriosis, suggesting that thyroid dysfunction may exacerbate the condition^{iv}.

Iodine Deficiency

Despite iodine being an essential nutrient for thyroid function and wider health, around 5 billion people worldwide (68% of the global population) remain deficient in this nutrient^v. The UK is one of the worst countries, and Europe is considered an iodine deficient continent^{vi}.

The Scientific Advisory Committee on Nutrition (SACN) notes that there are certain groups which are at an increased risk of iodine deficiency, namely young women and those following a plant-based diet^{vii}.

Emerging evidence suggests that iodine may possess anti-inflammatory properties. A study indicated that adequate iodine levels can reduce inflammatory cytokine production^{viii}. This raises the possibility that sufficient iodine intake may also help mitigate the inflammatory processes associated with endometriosis.

Nutritional Approaches to Endometriosis Management

Given the potential links between iodine, thyroid function, and endometriosis, dietary interventions focusing on iodine-rich foods may be beneficial. Seaweed is the only natural and plant-based source of essential iodine, with the other sources being fish

and dairy. The type of seaweed, and its source is important in ensuring safe and stable levels of iodine.

Conclusion

With iodine deficiency rates at worrying levels, particularly among women, there is the need to support women's iodine status in a natural way, and address causes and symptoms of Endometriosis.

PureSea® is the proven gold-standard seaweed ingredient, being sustainably wild harvested from the pristine Scottish Outer Hebrides and carefully processed using proprietary technologies. PureSea® Natural is organic and kosher certified, with each batch tested for safety, quality and nutrition – including iodine levels - ensuring the ingredients are suited for use in any application to provide a safe, natural source of iodine.

PureSea® ingredients are delivered in powder and granule formats, providing ease-of-use and application in almost any food, beverage, or nutrition product to deliver both health and flavour benefits. Including a small amount of PureSea® in your product allows use of six EFSA approved health claims surrounding:

- Thyroid Function
- Energy-Yielding Metabolism
- Cognitive Function
- Development in Children
- Healthy Skin
- Nervous System

About the Authors

Dr Craig Rose is a marine biologist, founder and managing director of Seaweed & Co. Craig has worked commercially and on research projects on the benefits of seaweed for around 15 years, and leads several research projects with university partners, is on industry advisory bodies and has presented at numerous conferences and to the media.

Sarah-Jane Hall is a qualified Nutritionist, with a degree in Human Nutrition and a master's degree in Public Health Nutrition. Sarah-Jane is the in-house Nutritionist at Seaweed & Co. and has conducted research on various aspects of nutrient deficiency – specifically iodine deficiency.

Seaweed & Co. as a company advise on, supply and accredit seaweed, using proprietary technologies and techniques. Their Organic and Kosher certified PureSea® seaweeds are supplied into the food, health and nutrition markets. Their seaweeds are sustainably wild harvested, naturally rich in iodine, uniquely DNA Authenticated for world class analytical traceability, and extensively batch tested and accredited for safety and quality.

FOR ADDITIONAL INFORMATION ON PURESEA®



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ⁱ Gonzalez, J. S., et al. (2020). "The burden of endometriosis: a review of the literature." *Journal of Women's Health*.

ⁱⁱ Missmer, S. A., et al. (2010). "Endometriosis and risk of infertility." *Obstetrics & Gynecology*

ⁱⁱⁱ Leung, A. M., et al. (2011). "Iodine deficiency: a global health problem." *American Journal of Clinical Nutrition*

^{iv} Vaidya, B., et al. (2012). "Hypothyroidism and endometriosis." *European Journal of Endocrinology*

^v Passarelli et al. (2024) Global estimation of dietary micronutrient inadequacies: a modelling analysis. *The Lancet*, 12(10)

^{vi} EUthyroid Consortium's Krakow Declaration on Iodine (2018) Referenced in the Iodine Global Network Annual Report 2020.

^{vii} SACN: Iodine and Health. <https://www.gov.uk/government/publications/sacn-statement-on-iodine-and-health-2014>. (last accessed 18th March 2022).

^{viii} Koshiyama, H., et al. (2019). "The effect of iodine on inflammatory cytokines." *Clinical Nutrition*

