EDITH COWAN UNIVERSITY

PROJECT DETAILS

Project Title:

Evaluating the Environmental and Vascular–Metabolic Health Benefits of Australian Seaweed Consumption

Project Summary:

This project aims to investigate the vascular and metabolic health benefits of Australian seaweeds using an LC-MS-based metabolomics approach. Specifically, we will identify bioactive compounds such as polyphenols, phlorotannins, fucoxanthin, and fatty acids that have shown potential in preventing or managing metabolic disorders like cardiovascular disease (CVD). These compounds will be studied across edible seaweeds from three major taxonomic groups: red, brown, and green algae. The species with the highest concentration of bioactive compounds will be selected for further investigation using a mouse model to assess its metabolic effects.

In parallel, we will explore the environmental benefits of seaweed farming, focusing on its capacity to absorb carbon dioxide and contribute to climate change mitigation. Seaweed cultivation not only supports marine biodiversity but also acts as a natural carbon sink, helping to reduce greenhouse gas concentrations. Moreover, integrating seaweed into human diets promotes sustainable food systems, as seaweed requires no freshwater, fertilisers, or arable land to grow, making it an eco-friendly alternative to traditional crops. By linking dietary seaweed intake to metabolic changes observed in vivo, this research will provide insights into seaweed-derived metabolite interactions and their roles in modulating cellular functions, signalling pathways, and energy metabolism. In doing so, it underscores the dual benefit of seaweed consumption; enhancing human health while supporting planetary health.

Preferred Applicant Skillset:

We seek a highly self-motivated PhD candidate with excellent organisation, problem-solving, time and project management skills. The candidate should have the ability to work in a team or independently across multiple demands while maintaining a high level of accuracy and productivity, as well as strong statistical skills and familiarity with mass spectrometry, particularly Liquid Chromatography Mass Spectrometry (LC-MS).

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