

END OF PROJECT REPORT

Purpose of End of Project Report

SRP 2022-27 projects provide quarterly progress reports and annual narrative summaries as well as research outcomes throughout the term of the project via the Researchfish platform. This end of project report provides additional information when a project finishes that can be used to summarise what the project has delivered, lessons learned and next steps. This report will be published on the SRP 2022-27 project webpages of SEFARI Gateway or on the Scottish Government website.

All sections must be completed

Project Researchfish ID	RI-B7-05		
Project Name	Risk-benefit analysis of Scottish seaweeds as a sustainable food source		
Principal Investigator	Alan Sneddon		
Start Date	1st April 2022	Completion Date	31 st March 2023

Purpose of the project

The overall objective of the work was to test the evidence that Scottish seaweeds can provide rich, sustainable, plant-based sources of essential dietary micronutrients (minerals and vitamins) with an eventual goal to include these as dietary ingredients within food products. A key driver of the research is the need to provide sustainable alternatives to animal-derived micronutrients which will decrease as diets change to address the climate emergency and strive towards Net Zero. Establishing seaweeds with safe, beneficial levels of micronutrients has provided industry with key product data and added value as it drives to increase algal cultivation and production within Scotland.

Objectives achieved/not achieved

All the objectives/research questions of this one-year project were successfully achieved, and a report was produced and disseminated to relevant stakeholders. Results demonstrated that many Scottish seaweed species can provide safe, dietary-relevant amounts of many micronutrients, including vitamin B₁₂, iodine, iron, magnesium and potassium. In particular, distinguishing seaweed as a potentially rich, plant-based source of vitamin B₁₂ could help provide a more sustainable dietary source of this exclusively animal-derived vitamin and provide industry with an additional marketing opportunity for their product. Farmed seaweeds were also shown to contain many of the same levels of micronutrients as wild seaweeds and therefore equally able to contribute as a source of these nutrients when produced at scale. Furthermore, additional work carried out within the project verified that a simple processing procedure of seaweed (hydrothermal

treatment for 5 mins in water) can drastically reduce the high iodine content of certain seaweeds to safe, dietary-relevant levels, which, with optimisation, will benefit the industry by allowing the release of more seaweed for human consumption.

Outcomes

A report on the outcomes from this work was distributed to relevant stakeholders, including Scottish Seaweed Industry Association (SSIA) and Scottish Association for Marine Science (SAMS) for further dissemination. Results, particularly on seaweed vitamin B₁₂ content, has been received enthusiastically by Industry, which will likely be able to build on these results to ultimately help drive sales.

Project Insights

The true effects of seasonality and location of harvest on seaweed nutrient/ heavy metal levels could not be fully addressed due to the short-term nature of the project. A more long-term study would be able to investigate these factors in greater detail providing new information on the nutrient availability of seaweed.

Next Steps/ Future Plans

The PI has been awarded UKRI grant funding with a seaweed company to take some of the aspects of this project forward. Additionally, he has been in discussion with other seaweed companies on other possible funding opportunities from this work to help address wider industry issues concerning seaweed nutrients and their potential benefits to dietary intakes. This work could investigate industry-relevant issues of how seaweed processing practices influence nutrient content as well as assessing, for example, the bioavailability of nutrients from seaweeds such as vitamin B₁₂ and iodine and also macronutrients including fibre (of which certain seaweeds are excellent sources) and contribute to improving nutrient status within consumers.