

Poster Abstracts in Program

Cooking and processing of seaweed to improve consumer acceptance, protein digestion and nutrient bioavailability

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New knowledge about human digestion, nutritional availability, flavour and health benefits of seaweed as a whole food is generated through this collaborative project. Several protein-rich seaweed species in their raw form, including *Undaria pinnatifida* and *Ulva sp.*, from New Zealand and/or Singapore are characterised from nutritional and food safety perspectives, and environmental factors affecting seaweed composition are investigated. Seaweed will then be prepared into delicious food products using innovative cooking methods for comparison with extensively processed seaweed to identify benefits of the whole food concept: Raw, cooked, and extensively processed seaweed will be digested in a state-of-the-art *in vitro* digestion system representing the stomach, small and large intestines. The latter will contain extracted NZ or Singaporean human gut microbiota to account for differences in diet, and thus in gut microbiota and ability to digest seaweed, between these two populations. Processes through different stages of digestion will be tracked using advanced proteomic, peptidomic and metabolomic techniques and microbiota composition. Metagenomic and metabolomic tools will monitor the longitudinal trajectory of both NZ and Singaporean microbiota and metabolite products during digestion. Results will be integrated to obtain mechanistic insight into seaweed cooking techniques, digestion and nutritional benefits to the consumer, both directly and through the impact of the microbiota, and will inform a human clinical trial.

This presentation includes an overview of the project, results to date and planned next steps. The knowledge generated in this project will inform product development of the next generation of seaweed-based protein-rich foods.