



IPSUS

Climate smart food innovation using plant and seaweed proteins from upcycled sources

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Duration

14 April 2022 – 13 April 2025

Funding

€ 830,000

Websites

<https://foscera.net/en/foscera/Projects/IPSUS.htm>

<https://susfood-db-era.net/main/IPSUS>

INTRODUCTION

Food choices impact human and planetary health. The negative environmental impacts of the food system, increasing food insecurity and the prevalence of unhealthy diets are driving policymakers, scientists, companies and consumers to demand sustainable solutions. Globally, livestock emits 14.5% of GHGs, is associated with 30% of biodiversity loss, and, as meat demand is projected to double by 2050, transitioning to diets that include more sustainable sources of protein is crucial. Plant-based proteins are currently the fastest growing food trend but at present are unsustainably dependent on soy.

AIM

The IPSUS project will exploit inter-disciplinary and eco-innovative approaches to explore opportunities for upcycling plant and seaweed proteins from agri-food raw materials otherwise destined to join the ~1.6 billion tonnes of annual global food loss and waste (FLW). The quantity, quality, and upcycling opportunities of FLW occurring along the value chains of six protein-rich commodities (pumpkin, hazelnut, grape, potato, brewers' spent grain, and seaweeds) will be investigated in the UK, Italy, Romania, Turkey, and Morocco to contribute towards achieving Net Zero through linking sustainable protein shift and food waste valorisation.

ACTIVITIES AND EXPECTED RESULTS

The types and quantities of FLW with protein upcycling potential within the focal value chains will be explored and compared. Novel protein extraction methods will be assessed to identify and optimise less energy intensive and more sustainable techniques. The nutritional quality and safety of the plant and seaweed sources and upcycled proteins will be assessed, taking bio-accessibility and potential allergenicity into account. In addition, incorporation of upcycled proteins into meat alternative and dairy alternative formulations will be tested at lab-scale, followed by prototype development at pilot-scale by the industrial partners. Functional and sensory acceptability of the prototypes will be evaluated along with improved nutritional (low salt/sugar/fat) and cleaner label (fewer food additives) offerings which are currently lacking in the plant-based meat and dairy alternatives. Exploration of consumer behaviours, preferences and the enabling regulatory and policy environment will reveal drivers and barriers of the sustainable protein shift via upcycled plant proteins.