Sustainable and healthy food design with *water lentils* - Functional properties –

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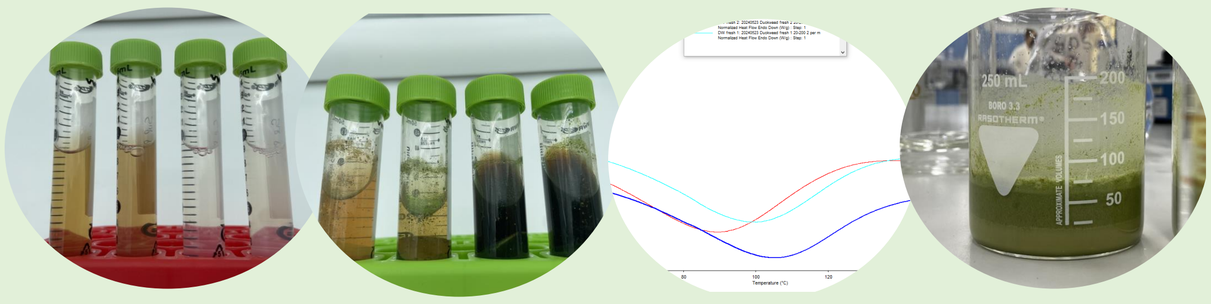
Duckweeds or water lentils (family Lemnaceae) are floating plants with very small leaves and a high growth rate. Due to their fast growth rate, adaptive capacity, high content of essential amino acids and bioactive compounds have led the scientific community to consider duckweed as a sustainable and healthy food ingredient. To characterize the food product to be fortified, it is important to study the change in the nutritional content and functional properties of proteins throughout the process. In food formulation, both nutritional and functional components play an important role in giving healthy and nutritious foods but also texture and even structure.

The aim of this project is to analyze the chemical composition, protein digestibility, and functional properties of duckweed samples that have undergone different processes. This will allow us to understand how the process influences these properties for the design of nutritional, healthy, and stable food products with duckweed.

Can duckweed be considered as a functional food ingredient for the design of a nutritional, healthy and stable food product?

PROCESS

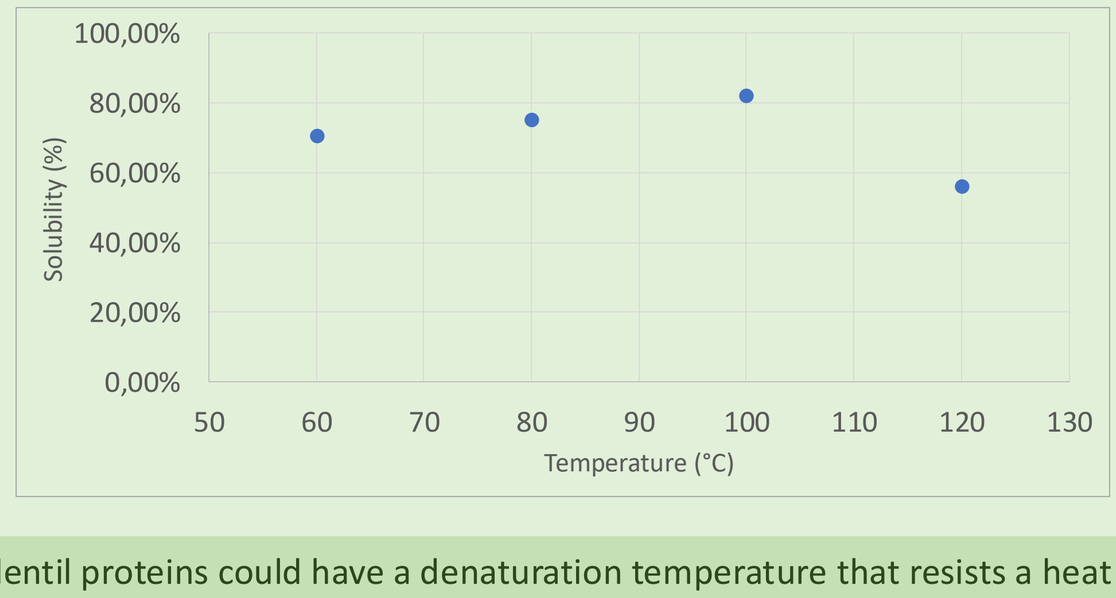
FUNCTIONALITIES



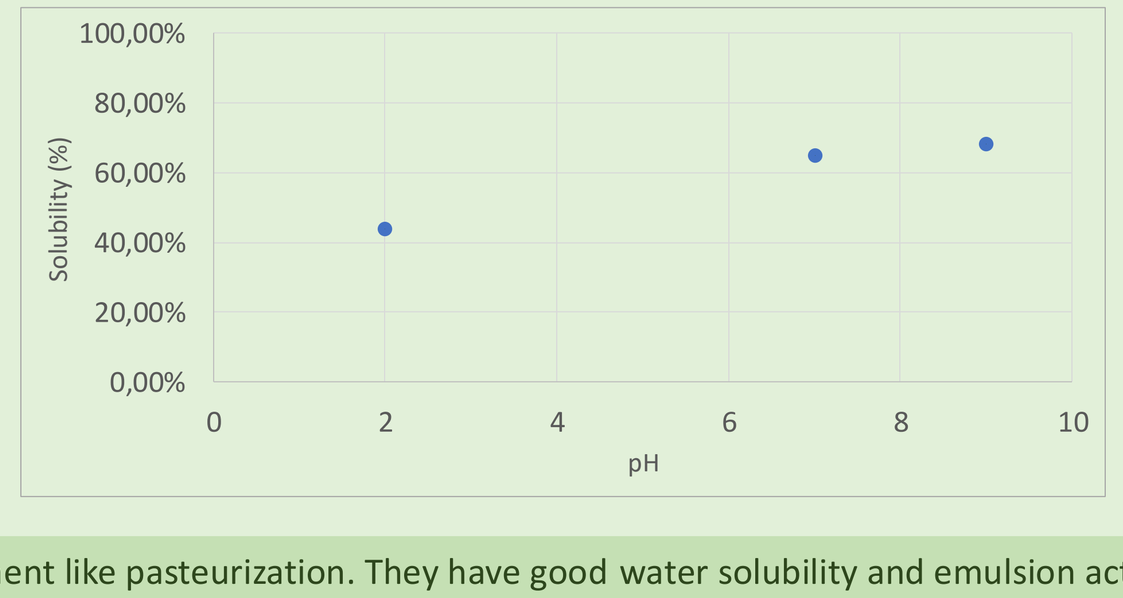
HEALTHY AND STABLE FOOD PRODUCT

Temperature of denaturation	97,46 °C
Emulsion activity index	84,67 m^2/g
Solubility %	Dependent on temperature (graph 1) and pH (graph 2)

Graph 1 Effect of temperature on solubility of water lentils



Graph 2 Effect of pH on the solubility of water lentils



Water lentil proteins could have a denaturation temperature that resists a heat treatment like pasteurization. They have good water solubility and emulsion activity index compared with other plant proteins like soya. So, duckweed is not only a healthy ingredient, but with the results so far, it is also an important ingredient for the design of a stable and functional food product.

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