Convenience Food Enriched with Marine based Raw Materials - EnRichMar
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Publishable summary of the EnRichMar project (no 606023)

In recent years, marine-based bioactive ingredients extracted from low value by-products and underutilised raw material are being introduced into commercial products. Such products may obtain added value, both economical, for health and for more sustainable use of resources. Seaweed extracts from certain brown algae species, e.g. *Fucus vesiculosus*, have unique properties such as antioxidant, anti-inflammatory and anti-diabetic activities, which make them highly attractive for use in various food systems. Due to positive preliminary tests it is believed that seaweed extracts can be highly competitive on the market and find various uses in food. A unique tasteless marine based omega-6/omega-3 both available on the market as powder and oil has the ability to regulate and maintain the body's fatty acid balance while simultaneously safeguarding the daily need for omega-3 from fish and provide protective biological flavonoids from olives. By adding the unique omega blend to lean fish products, the lean fish products will acquire the desired properties of omega-3 rich fatty fish. Adding the omega blend to other foods like dairy and cereals, possibilities will open up for broader categories of convenience food for targeted consumers. Recent process improvements have created new possibilities for the use of marine based ingredients in functional foods.

The main aim of the EnRichMar project was to increase the value of convenience food by adding functional ingredients, produced from underutilised marine based raw materials and by-products from fish processing, with confirmed bioavailability. The consortium of EnRichMar consisted of two ingredient producer SME's and three food producing SME´s, all interested in strengthening their competiveness, increasing market share and creating business opportunities in national and European markets using the expert knowledge and capacity provided by four RTD partners. The focus was placed on fish oil, powder of fish oil and seaweed extracts, with the potentials to have positive health effects, increase product stability, enhance flavour and consequently contribute to salt reduction of the products to meet market demand. The first steps taken in the EnRichMar project, were upscaling of seaweed extract followed by evaluation of bioactivity by in-vitro measurements of seaweed extracts and omega blends. Parallel, consumer segments interested in enriched products were identified in order to direct further product development to meet the needs and wants of those segments. Seafood dishes, dairy and cereal products enriched with the seaweed extract and the omega blend were developed and effects of the processing and ingredients on sensory characteristics and stability were evaluated. Consumer liking of the enriched products per food category was evaluated. The physiological and mental effects of consuming food products enriched with seaweed extract and the omega powder developed in EnRichMar were evaluated in a double blind cross-over designed intervention study. As a result of the EnRichMar project, it is now possible to produce high value functional extracts and ingredients from marine seaweeds and the SME is steps closer to entry in lucrative new markets for the bioactive ingredients in different food systems. The ingredient SME focusing on the production of omega-6/omega-3 can extended their previous product range of bioactive products, and have now entered new markets for the bioactive ingredients in food systems due to foreseen launch of ready meal products containing the omega oil. The SMEs in EnRichMar have obtained valuable marketing information about functional foods and consumer views on functional foods in important markets and have developed enriched food prototypes based on information collect about the main target groups of interest. Further, they have now first-hand information about physiological effects of consuming the enriched foods. Integral to the project was the development, for each SME, of a new higher value business model for the future, based on the assertion that the development of convenience food enriched with the bioactive ingredients with confirmed bioavailability and bioactivity, will impact positively their financial performance.