

Edible seaweed: a natural approach to taste enhancement and salt reduction?

A new European funded collaborative project - "TASTE" will explore the possibilities.



TASTE is a new EU FP7 SME project with the main goal of developing flavour ingredients from three edible brown seaweeds (*Ascophyllum nodosum*, *Saccharina latissima* and *Fucus vesiculosus*) with the potential to replace sodium in food products that traditionally contain high levels of salt.

The development of new strategies & technologies for salt reduction is a key driver across all sectors of the food industry today. With approximately 75% of the average daily salt intake coming from processed foods such as bread, meat products, cheeses, ready meals, soups, breakfast cereals, crisps & savoury snacks, the food industry is facing a major challenge to reduce the levels of salt used.

Salt (sodium chloride) is primarily added to food products for taste but plays an important role as a preservative and also as a processing aid. Reduction of salt can therefore, pose potential issues with the quality and safety of reformulated products in addition to affecting the taste and consumer acceptance.

A number of strategies are successfully being used by industry to reduce salt levels in foodstuffs but all have their limitations and it is generally accepted that a combined approach will be required to meet reduction targets. One approach is to replace salt with mineral blends, natural salts and other compounds that act to increase the perceived saltiness and to enhance flavour. This is where edible seaweed shows potential.

Edible seaweeds contain a number of components that could render them useful. They typically contain high levels of minerals such as potassium, magnesium, calcium and zinc that can be used in mineral replacement strategies. Of course they also contain sodium but typically at lower levels than the potassium content and often at levels equivalent to magnesium & calcium ⁽¹⁾.

Seaweeds are also a rich source of natural flavour enhancers. Some species have high levels of flavour important amino acids like glutamic acid, aspartic acid and alanine in free form and also high levels of free glutamates. Some species even contain ribonucleotides ⁽²⁾.

The TASTE project was conceived by a group of European SMEs from the food and seaweed industries that are rising to the salt reduction challenge. Collectively the group faces a number of technical and commercial challenges that the project will address.

Innovative processing techniques will be used to produce flavour-active building blocks from the seaweeds which in turn will be used to develop flavour ingredients for application in selected salt-reduced foods



Fucus vesiculosus
One of the species that will be assessed in the TASTE project

SMEs are the backbone of the food and drink industry in Europe and account for over 99% of all enterprises, 63% of total employment and nearly 50% of turnover of the European food and drink sector ⁽³⁾. This sector was worth an estimated \$2133 billion in 2009 ⁽⁴⁾.

CyberColloids (www.cybercolloids.net) is an Irish SME that has been working with seaweed derived food ingredients for many years. The company is very aware of the growing interest in seaweed as a natural source of components for flavour generation and salt reduction.

Prokazyme (www.prokazyme.com) are based in Iceland and are developers and producers of specialist enzymes. The company is keen to expand their portfolio to include enzymes for



use in the growing seaweed processing industry and value added product markets.

French SME **Aleor** (www.aleor.eu) produces a range of dried and fresh seaweed products and extracts that are used for human food, cosmetics and the biotech industries. They are currently supplying products for salt reduction but are keen to expand in this area.



Seaweed ingredients will be tested in a range of food applications including bread

Scheid (www.scheid-gewuerze.de) are a German SME that produces spice mixtures and other ingredients for the meat product industry. This sector of the food industry faces many technical challenges in order to meet salt reduction targets.

Calaf (www.calafnuances.com) are a Spanish flavour house that produces a wide range of natural flavours, in particular savoury flavours, for use in food, beverages and food ingredients. The development of seaweed derived flavour solutions for salt reduced foods is an area that the company is keen to explore.

The research expertise for the project will come from two European centres of excellence:

Matis (www.matis.is) is an Icelandic Food and Biotech R&D organisation that services the food, fisheries and aquaculture industries. Matis focuses on innovation in food biotechnology, food safety and quality. Matis' vision is to

increase the value of food processing and food production, through research, development, dissemination of knowledge and consultancy, as well as to ensure the safety and quality of food and feed products. Matis is the TASTE project coordinator.

The Fraunhofer-Gesellschaft is Europe's largest application-oriented research organization and is based in Germany, with about 60 institutes in different fields of research. The Institute for Process Engineering and Packaging in Freising (www.ivv.fraunhofer.de) specialises in food product development, product quality and analysis, functional ingredients & biogenic raw materials. The institute works closely with industry and has a well-equipped pilot-plant in which a wide variety of food products can be developed and tested.

In the project is also involved the company **Frutarom Etol** (www.frutarom.com) from Slovenia who belongs to the multinational flavour company Frutarom. Frutarom Etol is an innovation driven flavour company that produces a wide range of natural flavours for the food industry.

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