Salt replacement from the sea - how wild wrack seaweed makes a suitable salt replacement

Researchers from the Food Innovation project at Sheffield Hallam University have been looking at ways to beat the unhealthy side effects of too much salt in foods.

By using Seagreens® wild wrack seaweed instead of traditional salt to flavour food, they have achieved a reduction in salt whilst still maintaining the organoleptic properties of the food. The Food Standards Agency in the UK, the Food and Drugs Administration in the USA, and a number of other food safety and consumer health authorities, are strongly advising a reduction in the amount of salt in foods.

These warnings against a high salt diet are aimed at preventing ill health including raised blood pressure and subsequent heart health problems that can be caused by a high salt diet. But it is recognised that salt does add to the flavour and taste of many foods and reducing it can adversely affect the flavour of the food.

Salt substitutes are available on the market (many based on potassium chloride) but they are not suitable for use in all foods, sometimes leaving a bitter taste in the mouth. They are also often perceived as “additives” in a food - going against the increasingly demanded “clean label” approach.

Suitable replacements

A pure and natural product that would give the salt taste plus other food safety and nutritional benefits is in demand. The Food Innovation team have been exploring the potential for the Seagreens® product to meet this demand. Not all seaweeds are suitable for direct food use as they may have a less well balanced profile of nutrients. They could also be contaminated by toxic metals, organic pollutants such as pesticides or even sewage bacteria. The degree of contamination is usually related to the closeness of harvest to populated land masses.

The product that the Sheffield Hallam team has been investigating is a wild wrack seaweed harvested from clean, unpolluted waters around the less inhabited parts of Norway. Seagreens® is the product of an Anglo-Norwegian joint venture and is harvested and processed to give a food safe and highly acceptable product that can be incorporated into a range of foodstuffs. It is a certified material in the UK and the USA for use in organic and biodynamic foods.

The University has carried out extensive testing to confirm the absence of a wide range of toxic, carcinogenic or teratogenic chemical substances. These include organotin and other toxic metals, polychlorinated biphenyls and organophosphates and also looked at its microbial profile.

The material tested has come out A1 in all aspects tested. Early testing has also suggested that when used in some meat products it has an antibiotic, or at least a

bacteriostatic effect on common spoilage and potential food poisoning organisms.

Too good to be true?

The test results to date are encouraging. There are many benefits for using wild wrack over sodium chloride including:

- A salty taste with only 3.5% sodium present and a good balance of other minerals
- Free from all the common contaminants tested for
- Appears to be allergy free after more than ten years use as a food supplement and additive
- 100% vegetable in origin so suitable for vegetarians and vegans

Wild wrack does have a relatively high level of iodine that, although an essential mineral, is contraindicated during pregnancy. But even for this mineral, there is evidence from many parts of the world that it is a deficiency in pregnancy rather than an excess that is the problem.

Under the Food Innovation project, product reformulation to meet developing health needs has been an important aspect. The early work on this sea-derived product appears to suggest many potential uses as a salt replacer.

The Food Innovation programme

This project is part of the University's £1.3m Food Innovation programme. Funded by the Higher Education Funding Council for England (HEFCE), the food innovation programme is designed to help companies respond to the business growth opportunities created by the healthy eating agenda.

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