North Atlantic seaweed is safe to eat

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Seaweed has been eaten for thousands of years by people all over the world, and it can be considered a tasty and healthy food item. This is the conclusion from professor Ole G. Mouritsen, Department of Physics, Chemistry and Pharmacy at the University of Southern Denmark, who has scientifically studied the species dulse (*Palmaria palmata*).

Dulse has traditionally been eaten by populations along North Atlantic coasts in countries such as Iceland, Ireland, England, Scotland, France, Norway and along the North American and Canadian Atlantic coasts. Dulse has particularly fine gastronomic qualities, and it can be commercially grown in tanks.

Previously other scientists from i.a. the Danish Veterinary and Food Administration have cautioned that dulse may contain dangerous levels of the neurotoxin kainic acid, which, when consumed in large doses, can lead to brain damage. Professor Mouritsen´s research now shows that dulse contains only extremely small doses of kainic acid, and that a person needs to eat 150 kg fresh dulse in one go in order to experience the poisoning effect observed in animal studies.

"Dulse is - when you observe common sense rules for freshness and hygiene when handling food - perfectly safe to eat. No person can eat 150 kg in one go", says professor Mouritsen.

He and his colleagues also measured dulse´s content of heavy metals, inorganic arsenic and iodine - substances that may occur in seaweeds and may be harmful in large doses.

Dulse contains only very small concentrations of iodine, arsenic, mercury, cadmium and lead, and they are all below the WHO-defined limits. Nor the content of vitamin K is alarmingly high.

"Not even people who take blood thinning medicine need to worry if they eat dulse in moderation," says professor Mouritsen.

Two well-known seaweed species (*Sargassum muticum* and *Sargassum fusiforme*) are known to have a very high content of inorganic arsenic, which increases the risk of cancer. *S. fusiforme* is not found in North Atlantic waters, but can be purchased in stores. *S. muticum* is found in North Atlantic waters.

For his own part professor Mouritsen is not nervous to harvest and eat seaweed from North Atlantic waters.

"There are many delicious, healthy and safe seaweed species in North Atlantic waters. Just stay away from old seaweed washed up on the beach and harvest only seaweed from clean waters", he adds.

Dulse is a particularly delicate seaweed, he points out, and he is supported by restaurant chefs. Through time dulse has been one of the most popular seaweed species in the parts of the western world with a tradition for eating seaweed.

"Dulse has a very appealing taste. It tastes best as dried and can be added to bread, omelets, soups and fish dishes. It can be fried and served as a crisp substitute for bacon or sprinkled over a salad", suggests professor Mouritsen.

Other interesting edible seaweed species from North Atlantic waters are:

- Winged kelp (Alaria esculenta). Raw in salads. Roasted and

granulated with fresh fruit.

- Oarweed (Laminaria digitata). Cooked in soups.
- Sugar kelp (Saccharina latissima). Raw in salads or packed around fish.
- Sea lettuce (Ulva sp). Raw in salads or dried and crushed into bread, dressings or omelets. Good source of iron.
- Bladder Wrack (Fucus sp). Blanched - watch it change color from light brown to green when it hits the boiling water.

More information: *Journal of Applied Phycology*, March 2013: On the human consumption of the red seaweed dulse (Palmaria palmata (L.) Weber & Mohr) by Ole G. Mouritsen, Christine Dawczynski, Lars Duelund, Gerhard Jahreis, Walter Vetter, Mark Schroeder.

Provided by University of Southern Denmark