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Fermentation of sugar kelp (*Saccharina latissima*) - effects on taste, nutritional quality and food safety

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Abstract:	Fermentation is an ancient technique for conserving food and feed, and for moderating taste and texture of foods. Fermentation of seaweeds for generating novel food products has yet only been described for few red algae. Here, sugar kelp (<i>Saccharina latissima</i>) was heat treated and fermented using lactic acid bacteria (LAB). Taste, smell and texture of the fermented product was compared to fresh sugar kelp and two commercial seaweed products (nori and wakame). Tissue contents of dry matter, nitrogen, mannitol, and selected minerals and trace metals of the fresh and fermented sugar kelp were quantified and compared.	

In the fermentation process, the pH was reduced to 4.5 within 36 hours, with LAB counts increasing two-fold and no *Bacillus cereus* present. Heat treatment and fermentation caused a reduced saltiness and umami flavour of the sugar kelp, a less slimy visual appearance and a reduced smell of sea, whereas the texture and protein content was unchanged compared to the fresh sugar kelp. The fermented sugar kelp had a stronger bite than nori and wakame, a stronger smell of sea and a more salty, irony and umami rich taste than nori, but less umami and salt taste than wakame. The fermentation process reduced the contents of sodium (-15%), cadmium (-36%) and mercury (-35%) in the sugar kelp. LAB fermentation of sugar kelp showed promising for broadened the food market for seaweeds as the fermented product had a milder taste, improved visual impression and smell, and a reduced content of harmful trace metals.