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Fermentation of seaweeds-alchemy of algae and aquatic plant biomass

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Fermentation of seaweeds has been studied with an interest in obtaining biofuel. However, few studies on this topic are conducted for obtaining food and related products. This paper introduces recent advances in fermentation of seaweeds for developing food and related products.

Fermentation technology contains two important processes, i.e., saccharification and fermentation processes. Lactic acid fermentation of seaweeds was conducted for the first (Uchida and Murata, 2001) by the combination of saccharification by cellulase treatment and fermentation by addition of a microbial starter. Use of protease is observed to be effective for 'saccharification (or increasing glucose in the supernatant)' for the case of protein-rich seaweeds such as *Nori* (a dried product prepared from *Porphyra yezoensis*).

The fermented products are expected to be utilized in wide range of food and related industries. For example, a seaweed sauce product containing amino acids at the same level with soy and fish sauce products is prepared from *Nori*. It was observed that halophilic lactic acid bacteria originated from soy and fish sauces could not make growth in seaweed sauce, and suitable strains were newly isolated from environments for developing highly (>10%) salted seaweed sauce. The fermented products obtained from algae are also proposed to be utilized as a diet for aquatic animals called 'marine silage'. The fermented products of seagrass seeds are expected to be utilized not only as biofuel but also as alcohol beverages in future. The authors believe that fermentation of seaweeds will open new marine fermentation industries.

Biography

Motoharu Uchida has obtained his Ph.D. at the age of 40 years from Kyoto University. He is a chief of coastal fisheries and environment division, National Research Institute of Fisheries and Environment of Inland Sea, Fisheries Research Agency, Japan. He has published more than 50 papers in reputed journals and books.

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