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Development of a seaweed sauce by fermentation

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Fermentation technology is an invention of humankinds and has a long history. However, most fermented products are prepared from terrestrial biomaterials, and those from aquatic biomaterial are rare. Particularly, fermented products manufactured from aquatic plants are still to be developed. This study tried to develop a sauce from seaweeds by applying lactic acid fermentation technology. Lactic acid fermentation of seaweeds can be conducted by the combination of saccharification treatment and fermentation with a microbial starter. Any kind of seaweeds can be fermented with this method. However, the obtained products are short (one-fifth to -tenth of typical soy sauce products) of free amino acids in the supernatant. Therefore, increase of the amino acid content is necessary to develop a high quality seaweed sauce. To overcome this problem, the following points were studied. Firstly, *nori* (*Porphyra yezoensis*) was used as a raw material because it contains exceptionally high quantity (>50% on a dry basis) of protein. Secondly, protease treatment was conducted in the pretreatment process. Thirdly, the nidan-jikomi method was adopted: surplus quantity of *nori* was added after liquefaction of the sauce proceeded. Based on these skills, total nitrogen value of the products increased from 0.3 to 1.65% N, which is comparable to soy sauce products. Another point to be developed is a microbial starter. It was observed that halophilic lactic acid bacteria originated from soy and fish sauces could not grow in the *nori* sauce, and suitable strains were newly isolated from natural environments for preparation of highly (>10%) salted seaweed sauce.

Biography

Motoharu Uchida has obtained his Ph.D. degree 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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