

Ecological Survey of Halophilic Bacteria of Saltworks and Salted Foods

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Summary

Extensive ecological survey of halophilic bacteria were carried out with the following samples: imported solar salts, saline water and salts of salt manufacturing factories, the saltern of Ako Marine Science Museum and marketed salts. In this case, much attention was paid so that most of the varieties of halophilic bacteria contained in the samples, could be isolated. Enrichment cultures were done using 0 to 4 M NaCl nutrient broth (NB) and 3 to 4 M NaCl Sehgal and Gibbons complex medium (SGC) by shaking at 30°C for 15 to 25 days. During the enrichment culture, the isolation was tried several times every 3 to 5 days by streaking on the agar plate medium from the cultures. The total 1119 strains were isolated from the samples, and for further examinations, the 305 representative strains were selected based on the differences in the samples, the media for isolation and the appearance of the slant cultures. The all solar salt samples gave good growth in either NB or SGC of 1 to 4 M NaCl. Red extreme halophiles were isolated from the SGC culture while non-pigmented salt-tolerant and moderately halophilic bacteria were from the NB culture. On the other hand, the samples of the salt factories and the Ako saltern contained moderate halophiles but not red extreme halophiles. The marketed salts were free from the bacteria except crude salt. This characteristic difference of distribution of the halophilic bacteria between the imported solar salts and the salt factories or the Ako saltern was also confirmed by the observation of their Na<sup>+</sup> and K<sup>+</sup> requirement for the growth. The storage examination of the salted salmon using two kinds of salts, the imported solar salt contaminated with red halophiles and the marketed salt free from the bacteria, demonstrated that the extent of bacterial contamination of salts used, reflected bacterial spoil of the salted food.