

Study on bacteria isolated from solar salt rock

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Summary

In Japan, a lot of salts was imported from many foreign countries, main part of it from Mexico(50%) and Australia (40%). These salts consist of mainly solar salts. We found that the bacteria exist in these imported solar salts, and it was tried to isolate the bacteria from these salts.

The bacterial cells isolated required Na ion for the growth in the culture medium and could not grow in salt-free medium. They also indicated no growth in the hypertonic environment by the non-electrolytes such as sorbitol or sucrose. They exhibited a obligately halophilic character. Some bacterial cells had rather high salt resistance, it was possible to grow in the salt environment of wide range of NaCl concentrations from 0.5 M to 3.0 M, and reached the full growth in the concentrations of NaCl from 0.5 M to 2.0 M. However, the growth rate was maximum in 0.5 M NaCl concentration in some bacterial cells. Therefore, it was suggested that they were slightly halophilic bacteria or marine bacteria. Some bacterial cells also could grow in hypertonic environment with 0.5 M KCl, MgCl₂ and LiCl instead of NaCl. Optimal temperature for growth of isolated bacterial cells was at 25° C in BYP medium and some bacterial cells could grow even at 42° C.

Based on these results, it was recognized that a slightly halophilic bacteria which originated from marine bacteria had considerable diversity on salt resistance for the growth by the adaptation in solar salts rock.