

Search for Antibacterial Substances Derived from Marine Bacteria for Application to Food Preservatives

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Summary

It is well known that in pickles of fermented foods having a high salt concentration, spoilage is suppressed by the antibacterial activity of lactic acid bacteria in addition to the effect of salt. On the other hand, in food preservatives, the development of antibacterial substances that do not affect the taste and flavor is required. In particular, the peptide antibacterial substance Nisin derived from lactic acid bacteria is used as an excellent food preservative. An antibacterial compound, ϵ -Poly-L-Lysine, produced by an actinomycete is also used as a food preservative. As described above, the antibacterial substance derived from bacteria has a possibility as a food preservative. However, the food preservatives currently used are expected to have resistant bacteria in long-term use, and there is an urgent need to develop new food preservatives. Many marine bacteria are salt-tolerant bacteria, and bacteria suitable for use in the fermentation industry such as pickles can be expected. We isolated marine bacteria and performed antibacterial activity tests on the obtained bacterial strains. As a result, we succeeded in isolating seven bacterial strains. Among them, we performed identification of one bacterial strains OHYA-14 and OHYA-26 by analysis of 16S rDNA sequence. As a result of 16S rDNA analysis, OHYA-14 and OHYA-26 were identified to be an actinobacteria belonging to *Streptomyces* and *Microbacterium*, respectively. The cultured bacterial cells were extracted with methanol. The methanol extract was analyzed by HPLC using ODS column. The peptide antibacterial compound was isolated from the methanol extract. The compound was subjected to ESI-TOF-MS analysis to obtain partial structure. The antibacterial compound was suggested to be a lanthipeptide by the partial structure. The compound exhibited the potent antibacterial activity against a gram-positive bacterium *Micrococcus luteus*.