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Diversity of Marine Microbes in seashores of Busan by PCR-DGGE

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Denaturing gradient gel electrophoresis of 16S rDNA fragments, generated by the polymerase chain reaction, has frequently been applied to the diversity of natural bacterial populations. This method constitutes direct extraction of the environmental DNA and amplification of typically 200–600 bp sized 16S rDNA fragments. And then, these fragments are separated according to their melting point on a denaturing gradient gel. In this study, we performed that extraction of marine genomic DNA from the seawater samples on seashores of Busan, PCR amplification with 16S rDNA bacterial universal primers, and denaturing gradient gel electrophoresis (DGGE) of amplified 500 bp sized 16S rDNA fragments. And, 16S rDNA genes were further analyzed by sequencing. Based on these experiments, we found DGGE analysis clearly showed a few variations among the regional groups. It is demonstrated to rapidly monitor changes in the bacterial diversity from the various environments. Also, the results of sequence analysis were indicated existence of a large number of unculturable bacteria such as *Alpha-proteobacter*, *Arcobacter*, *Gamma-proteobacter*, *Gliocicola*, *Marinomonas*, *Polaribacter*, *Roseobacter*, *Thermococcales* as well as the existing *Flavobacterium*, *Pseudomonas*, *Vibrio*.

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Control of yam-putrefactive psychrotrophic bacteria by clove oil and the role of polygalacturonase in yam putrefaction

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Yam has been recognized as healthy food due to its various beneficial effects, such as prevention of cancer, microbial infection and obesity. As sharp increases of yam consumption during last decades, the development of long-term storage techniques of yam is necessary. Our group have reported that yam could be stored for 1 year without severe loss of nutrient or weight, unless psychrotrophic bacteria or fungi are contaminated. In the present study, the control of psychrotrophic putrefactive bacterium, *Pseudomonas* sp. Yam-12, using different extracts of natural spices, including clove oil and cinnamon, was investigated. Treatment of Yam-12 strain into sliced yam-fresh cut resulted in severe putrefaction within 10 days. Api-Zym assay revealed that this putrefaction was closely related to the polygalacturonase activity of Yam-12. The enzymes was induced by yam powder, pectin, and polygalacturonic acid, and stable at alkaline pH and <50 °C. The strong enzyme activity was identified at >pH 6 and 30~50 °C, suggested that acid treatment could reduce the yam putrefaction. However, acid treatment showed a disadvantage of appetite. Treatment of clove oil into yam-fresh cut reduced the Yam-12 growth and inhibit the activity of polygalacturonase during 14 day storage. Our results suggested that natural spices could be used as safe preservation agent in yam-fresh cut.

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