B013

Biodegradation of Phenanthrene by Psychrotrophic Bacteria Isolated from Lake Baikal

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Psychrotrophic phenanthrene-degrading bacteria were screened from the sediment samples collected in Lake Baikal, Russia. Among 70 phenanthrene-degrading isolates, Gram positive rod-shaped strain P25 showed the highest growth and degradation rate at 15°C. It could remove 26.0% of 100 mg l^{-1} of phenanthrene after 20 days of incubation at 15°C, higher than the degradations at 5 and 25°C. Addition of glucose increased the phenanthrene biodegradation, and it may be due to the increased bacterial biomass. Addition of different nitrogen sources did not showed the difference in the phenanthrene degradations by strain P25. Surfactant addition was tested to enhance the phenanthrene degradation by strain P25. Brij 30 and Triton X-100 inhibited the phenanthrene degradation in all concentrations of surfactant tested, but Tween 80 stimulated the phenanthrene degradation by strain P25, especially in low concentrations of surfactant, and could degrade 38.0% of 25 mg l^{-1} of phenanthrene after 12 days of incubation at 15°C. This psychrotrophic phenanthrene-degrading bacteria can be a candidate for the bioremediation of polycyclic hydrocarbon contamination in cool areas.

B014

Investigation on Artificial Fruit Body Formation of *Cordyceps cardinalis*.

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Cordyceps cardinalis is a new species in Korea. It grows on lepidopteran larvae and produces stromata singly or in a group of 20 per host, usually two to three. Stromata are orangish-red to red in color and are 7-22×0.7-1.2㎜ in size. It produces characteristic red color when cultured in agar medium. Culture conditions for artificial fruit body formation of *C. cardinalis* were investigated using cereal grains. Biological efficiency of fruit body formation was the highest in adlay medium out of eight different grains. In case of brown rice medium, maximum biological efficiency of fruit body formation was observed when 50g of brown rice was used, supplemented with 10g of silkworm pupa and 50㎖ of distilled water. Optimum liquid inoculum amount for fruit body formation was 15～20㎖ per bottle. The optimal temperature and light for fruit body formation were 25℃ and continuous light condition.

B015

Identification of Psychrotrophic and Oligotrophic Bacteria by 16S rDNA Analysis Isolated from Lake Baikal

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The present study was conducted to identify the psychrotrophic and oligotrophic bacteria bacteria isolated from Lake Baikal during 2001 and 2003. Among 163 isolates of psychrotrophic bacteria and 59 isolates of oligotrophic bacteria, 63% and 61% were Gram negative, respectively. To identify isolates by 16S rDNA analysis, total DNA was extracted by using Wizard[R] Genomic DNA purification Kit. According to the analysis by 16S rDNA technique, the most dominant genera was *Pseudomonas* spp. Another dominant genera were *Brev-undimonas* and *Acinetobacteria* spp. for pychrotrophic bacteria and *Sphingobium* spp. for oligotrophic bacteria. These isolates were found to fall within five major phylogenetic groups: α-alpha proteobacteria, β-proteobacteria, γ-proteobacteria, high G+C Gram$^+$, and low G+C Gram$^+$ subdivisions.

B016

Properties of Culturable Marine Bacteria from Young Biofilm

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Biofilm is a starting point of biofouling and biocorrosion. However, there was not enough information about the biofilm forming bacteria in marine environments. In the present study phylogenetic position and bacterial properties thought to be concerned in biofilm formation such as cell surface hydrophobicity, attachment ability on surface, production of quorum sensing (QS) signal molecule etc. were investigated for 76 isolates of 3 days old biofilm. The isolates were able to be assigned to 28 known genera which have been reported widespread in marine environment. Approximately 31% of the isolates had been reported previously as uncultured or unidentified in GenBank database. Cell surface hydrophobicity and attachment ability were usually incompatible in a same strain except two isolates. Among the 39 strains produce QS molecule, 21 strains were able to degrade QS molecules. Strains showing same property were usually affiliated into same phylogenetic group. This result implied that the role of bacterial strains in the process of biofilm formation is closely related to the phylogenetic position.

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