氯酚分解的質體核酸(plasmid DNA)量化分析

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ABSTRACT

The purpose of this study was to quantify the amount of plasmid DNA of bacterial cells when they degraded the persistent organic compounds 2,4-Dichlorophenoxyacetic acid (2, 4-D). When placed into reaction with a persistent organic, most microorganisms go through a period of lag, followed by a rapid degradation. The ability to degrade was proposed to be mediated by plasmid DNA. Plasmids were detected in abundance in 4 species of bacteria and an activated sludge biomass after they had degraded 2, 4-D. The plasmids were about 90 kb which resembled the often reported pJP4. Amounts of this plasmid in Arthrobacter sp. were monitored during the courses of its acclimation and degradation of 2,4-D, during its de-acclimation, and during its re-acclimation. Concentrations of the plasmid, counted as ng/mg of biomass SS, rose correspondingly to the disappearance of substrate. This fact was induct to the rise of degradation ability the cell mass possessed. Fall of plasmid was shown when the cells were cultured in an idle mode in the absence of 2,4-D (de-acclimation). Plasmid increased again when the idle culture was re-inoculated with 2,4-D. This study attest the hypothesis that the abstract degradation capacity microbial cells had could be represented by this amount of plasmids contained in the cells.

Keywords : plasmid ; 馴化 ; 退化 ; 分解能力

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