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Characterization of *Pseudomonas aeruginosa* Degrading 4-Chloro-2-methylphenoxyacetic Acid Isolated from Soil Enrichment Culture

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A pure culture of *Pseudomonas aeruginosa* that can utilize 4-chloro-2-methylphenoxyacetic acid (MCPA) as its sole source of carbon and energy was isolated. Initially, clear zone formation on thin-layered MCPA agar plates was observed around spot inoculum of *Pseuomonas aeruginosa*. Various physiological and biochemical tests were performed for the isolate. This bacterium was able to degrade MCPA(300 mg/L) completely within 7 days as determined by UV-spectrophotometric analyses. During the MCPA degradation, the pH values decreased to pH 6.8 to 5.2. By agarose gel electrophoresis and curing experiment, it was found that the genes for MCPA degradation were encoded on the plasmids in this bacterium.

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Production and Characterization of β-amylase from the oomycete *Saprolegnia ferax*

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The oomycete *Saprolegnia ferax* produces an extracellular β-amylase. Maximum enzyme yields were attained after 7 days of growth in liquid media at 25-30℃. The amylase was purified 24 fold by ultrafiltration, anion exchange chromatography and gel filtration. The purified enzyme was a glycoprotein with a mol wt of 45,000 Da, which was monomeric protein. The pH and temperature optima were 6.5 to 7.0 and 50℃, respectively. The enzyme was fairly stable up to 50℃ and at acid pH range (pH 4.5-7.0). The apparent Km of the enzyme toward soluble starch, amylopectin, amylose and dextrin were 0.71, 0.83, 1.19 and 2.38 mg/ml, respectively. Starch hydrolysis with the enzyme released maltose but not glucose, whereas maltotriose, Schardinger dextrin(α-cyclodextrin) and pullulan were resistant to the action of the enzyme. The enzyme was inhibited by p-chloromercuribenzoate, Cu^{2+} and Hg^{2+}, and also competitively inhibited by Schardinger dextrin.