

Novel enzymes from unexplored microorganisms

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Abstract

Soil is one of the rich resources containing a variety of microorganisms. It is estimated that only 1% of microorganisms can be identified by culturing method whereas the other 99% cannot be cultivated. The uncultured microorganisms can be a promising source for novel biocatalysts to be investigated. With advances in biotechnology, the genes encoding enzymes of interest can be identified by either sequence-based or activity-based approaches. Our work has been focused on screening industrial enzymes including xylanases, cellulases, amylases, lipases, phytases and proteases. A gene encoding a novel cyclomaltodextrinase was isolated from Bor Khleung hot spring in Ratchaburi province using the PCR-based cloning method and expressed in *Pichia pastoris*. For the activity-based screening approach, a metagenomic library has been constructed from hot spring soil and the target genes will be screened by using fluorescence-labeled substrates