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Purification, characterization, and gene cloning of an *Aspergillus fumigatus* polyhydroxybutyrate depolymerase used for degradation of polyhydroxybutyrate, polyethylene succinate, and polybutylene succinate

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Aspergillus fumigatus **strain 76T-3 formed clear zones on agar plates containing emulsified polyhydroxybutyrate (PHB), polyethylene succinate (PES), polybutylene succinate (PBS), polycaprolactone (PCL), or polylactide (PLA). The strain grew well at 40 oC in Sabouraud Dextrose Broth. Solution-casted PHB films were almost completely degraded after incubation with 76T-3 at 45 oC for 17 h. An extracellular polyester-degrading enzyme was purified from the supernatant of 76T-3 cultures in basal medium containing PHB as the sole carbon source. Zymography results portrayed that the purified enzyme degraded PHB, PES, and PBS but not PCL or PLA. The amino acid sequence obtained from LC-MS/MS identified this enzyme to be a PHB depolymerase with a molecular mass of 57 kDa. The optimal reaction condition for the enzyme was pH 6.4 at 55 oC. The recombinant PHB depolymerase (rPhaZ) expressed in E. coli showed the enzyme can act on PHB only and not on PES or PBS.**

Biography

Hsin-Wei Jung is graduated from Graduate Institute of Applied Science and Engineering of biotechnology in Fu Jen Catholic University. His research focuses on the degradation of bioplastics by fungi or actinomyces. His resent publication can be found in the Journal *"Polymer Degradation and Stability"*. His Research interests are Application of environmental microbiology, Purification of polymer degradation enzyme, gene cloning and enzyme engineering

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