

## **Immobilization of mutant phosphotriesterase on fuller's earth enhanced the stability of the enzyme**

### **ABSTRACT**

Immobilization is a method for making an enzyme more robust in the environment, especially in terms of its stability and reusability. A mutant phosphotriesterase (YT PTE) isolated from *Pseudomonas dimunita* has been reported to have high proficiency in hydrolyzing the Sp and Rp-enantiomers of organophosphate chromophoric analogs and therefore has great potential as a decontamination agent and biosensor. This work aims to investigate the feasibility of using Fuller's earth (FE) as a YT PTE immobilization support and characterize its biochemical features after immobilization. The immobilized YT PTE was found to show improvement in thermal stability with a half-life of 24 h compared to that of the free enzyme, which was only 8 h. The stability of the immobilized YT PTE allowed storage for up to 4 months and reuse for up to 6 times. The immobilized YT PTE showed high tolerance against all tested metal ions, Tween 40 and 80 surfactants and inorganic solvents. These findings showed that the immobilized YT PTE became more robust for use especially with regards to its stability and reusability. These features would enhance the future applicability of this enzyme as a decontamination agent and its use in other suitable industrial applications.

**Keyword:** Phosphotriesterase; Fuller's earth; Immobilized enzyme; YT PTE