**Optimization of recovery of esterase from Serratia marcescens using combination of the solvent impregnated resin and aqueous two-phase extraction techniques**

ABSTRACT

The performance of tunable aqueous polymer phase impregnated resins (TAPPIR) which is the combination of the solvent impregnated resin principle and an aqueous two-phase system for the separation of esterase from Serratia marcescens was evaluated in this study. Different molecular weight of polyethylene glycol (PEG) (2000, 4000 and 6000) at concentration ranging from 5% to 20% (w/w) and potassium citrate were used to construct the aqueous phase in TAPPIR technology. Optimum composition of PEG and salt for esterase partitioning was determined using response surface methodology. The optimum condition for the purification of esterase was impregnation of 25% (w/w) of PEG 2000 into 4 mm porous glass beads and extraction of esterase using 15% (w/w) potassium citrate at pH 8 containing 12% (w/w) crude loading with the addition of 4% (w/w) NaCl. Esterase from S. marcescens was successfully purified by the TAPPIR technology up to 5.32 of purification factor with a yield of 75.98%.

**Keyword:** Esterase; Tunable aqueous polymer-phase impregnated resins; Polyethylene glycol; Purification.