

The assessment of Cholinesterase from the liver of *Puntius Javanicus* as detection of metal ions

ABSTRACT

Crude extract of ChE from the liver of *Puntius javanicus* was purified using procainamide-sepharyl 6B. S-Butyrylthiocholine iodide (BTC) was selected as the specific synthetic substrate for this assay with the highest maximal velocity and lowest biomolecular constant at 53.49 $\mu\text{mole}/\text{min}/\text{mg}$ and 0.23 mM, respectively, with catalytic efficiency ratio of 0.23. The optimum parameter was obtained at pH 7.5 and optimal temperature in the range of 25 to 30°C. The effect of different storage condition was assessed where ChE activity was significantly decreased after 9 days of storage at room temperature. However, ChE activity showed no significant difference when stored at 4.0, 0, and -25°C for 15 days. Screening of heavy metals shows that chromium, copper, and mercury strongly inhibited *P. javanicus* ChE by lowering the activity below 50%, while several pairwise combination of metal ions exhibited synergistic inhibiting effects on the enzyme which is greater than single exposure especially chromium, copper, and mercury. The results showed that *P. javanicus* ChE has the potential to be used as a biosensor for the detection of metal ions.