Evaluation of cholinesterase from the muscle and blood of Anabas testudineus as detection of metal ions

ABSTRACT

Another alternative source of cholinesterase (ChE) that is sensitive towards metal ion has been revealed. ChE from muscle and blood of Anabas testudineus were extracted and purified through ammonium sulphate precipitation followed by an ion exchange chromatography with a total recovery of 47.66% and 7.92%, respectively. Kinetic study measured that BTC was the most preferable synthetic substrate to blood ChE while muscle ChE preferred PTC with the biomolecular constant of 1.07 and 0.53 mM, respectively. Optimum pH for blood and muscle ChE were determined at 8 and 9. Both ChE shared an optimum temperature of 30°C. Inhibition study showed that muscle ChE has inhibited more than 50% of metal ions namely arsenic, chromium, copper, mercury and zinc compared to blood ChE with only copper and mercury. Studies on half inhibitory effect (IC50) of blood and muscle ChE were tested with series concentration of mercury calculated at 1.003 and 1.048 mg/L. This result will be used as a reference for future development of biosensor.