# An alternative bioassay using Anabas testudineus (Climbing perch) cholinesterase for metal ions detection


## Abstract

Climbing Perch or its scientific name, Anabas testudineus is one of the freshwater fish belonging to the family of Anabantidae. It is widely distributed in ponds, swamps and estuaries in Asia. In this study, cholinesterase (ChE) was partially purified from the liver of A. testudineus through ion exchange chromatography. This purification method provided a recovery yield of 5.36% with a purification fold of 6.6. The optimum conditions for ChE assay were identified to be 2.5 mM of butyrylthiocholine iodide (BTC) with pH 8.0 in Tris-HCl buffer at 40°C. Substrate specificity profile also indicated that ChE favours BTC as substrate because it records the highest catalytic efficiency (V/K). Protein analysis through Native-PAGE showed that ion exchange chromatography is an effective method to partially purify ChE. Metal ion inhibition tests were conducted and mercury (Hg) was found to show the highest inhibition effect (87.30%) whereas lead (Pb) shows the lowest inhibition effect (28.01%). All these findings showed that partially purified ChE from the liver of A. testudineus is suitable to be used as a bioindicator to detect the presence of metal ions.