

Assay for heavy metals using an inhibitive assay based on the acetylcholinesterase from *Channa striatus*

ABSTRACT

Acetylcholinesterase (AChE) is usually used as an inhibitive assay for insecticides. A lesser known property of AChE is its inhibition by heavy metals. In this work we evaluate an AChE from brains of striped snakehead (*Channa striatus*) wastes from aquaculture industry as an inhibitive assay for heavy metals. We discovered that the AChE was inhibited almost completely by Hg^{2+} , Ag^{2+} and Cu^{2+} during an initial screening. When tested at various concentrations, the heavy metals exhibited exponential decay type inhibition curves. The calculated IC_{50} for the heavy metals Hg^{2+} , Ag^{2+} , Pb^{2+} , Cu^{2+} and Cr^{6+} were 0.08432, 0.1008, 0.1255, 0.0871, and 0.1771, respectively. The IC_{50} for these heavy metals are comparable and some are lower than the IC_{50} values from the cholinesterases from previously studied fish. The assay can be carried out in less than 30 minutes at ambient temperature.

Keyword: *Channa striatus*; Acetylcholinesterase; Heavy metals; Inhibitive assay