

Short-Term Exposing Effects of 4,4'-DDT on Mitochondrial Electron Transport Complexes in Eyes of Zebrafish

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Abstract : 4,4'-Dichlorodiphenyltrichloroethane (4,4'-DDT) is colorless, odorless organochlorine and known as persistent toxic organic pollutant accumulated in organs. In this study, effects of 4,4'-DDT on activities of mitochondrial electron transport chain system was analyzed. 4,4'-DDT is directly treated to isolated mitochondria from eyes of zebrafish and then activities of mitochondrial complex I, II, III, IV were measured spectrophotometrically. The reaction was proceeded immediately after adding 4,4'-DDT to examine the short-term exposing effects of persistent organic pollutant. As a result, high concentration of 4,4'-DDT treated mitochondria exhibited slightly enhanced activity in all complexes than non-treated one except complex III in male. Particularly, 4,4'-DDT was more effective on enzymatic activity in mitochondria isolated from eyes of male zebrafish. These results represented that 4,4'-DDT might temporarily induce to open up ion channel on isolated mitochondria resulting in increasing the functional activity of mitochondrial electron transport chain system.

Keywords : electron transport chain, mitochondrial function, persistent organic pollutant, spectrophotometric assay, zebrafish

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