

Blood cholinesterase concentration and neurobehavioral performance of primary schoolchildren at Tanjung Karang, Malaysia

ABSTRACT

Background: Organophosphate pesticide is widely used to protect plants from pest are numerously used in agricultural activity. However, organophosphate also found to cause harm on human such as impaired neurobehavioral performance after prolonged chronic exposure. Objective: This study was aim was to determine the cholinesterase level and the relationship with neurobehavioral performance. Results: Result showed a significant difference in blood cholinesterase concentrations between the exposed and unexposed group ($\chi^2 = 39.822$, $p < 0.001$). The total score of NCTB test showed that the exposed group (351.08) score was significantly lower than the unexposed group (365.93). Reaction Time Test showed significant difference between the exposed and unexposed group. There was also significant relationship between blood cholinesterase concentration and Pursuit Aiming Test ($p < 0.001$). Housing area ($p = 0.017$), total household income ($p = 0.011$), father's occupation ($p = 0.012$) and mother's occupation ($p = 0.001$) were confounders which have influenced the blood cholinesterase concentrations. Conclusion: Blood cholinesterase have significantly influenced the Pursuit Aiming Test scores which reflected on the impairment of motor steadiness.

Keyword: Blood cholinesterase; Neurobehavioral performance; Pesticides; Primary school children