

Organophosphate pesticide mixture exposure: the relationship with the motor coordination of children from paddy farming area in Tanjung Karang, Malaysia

ABSTRACT

Paddy cultivation is one of the widely planted crop in Malaysia. The growth of agricultural activity leads to the use of Organophosphate pesticide to protect the crop. This study is to determine the relationship between the levels of blood cholinesterase with the performance of motor coordination of children living in paddy farming area in Tanjung Karang, Selangor. This cross sectional study was conducted among 683 children from four schools in an agricultural area. Majority of the children have at a family member worked as farmer and was involved with pesticides. A set of questionnaire on the was given to the children to be filled by their parents. To measure their exposure to pesticide, blood cholinesterase levels were measured. Blood samples were taken through finger prick technique and were then analysed using LOVIBOND 412870 AF287. The children were administered with motor-coordination performance test using WHO Neurobehavioral Core Test Battery and McCarthy Learning Ability Scale. Young group children (6-8 years) showed a mean score of 56.66 in motor-coordination test while older group children (10-11 years) scored a mean of 45.37. There was a significant relationship between blood cholinesterase level and motor coordination performance among the young-group children ($r=0.215$, $p<0.001$) and the older-group children ($r=0.106$, $p=0.049$). Based on the Linear Regression test results, total household income of family, and mode of transport used were found to have significant relationship with blood cholinesterase level of children in both groups. In addition, blood cholinesterase level and mothers' occupation were found to have significant relationship with the motor-coordination performance of all children.

Keyword: Organophosphate; Children; Blood cholinesterase; Motor-coordination