Children living in agricultural area can expose to pesticide residues via inhalation, ingestion and dermal contact. In Thailand, there has been used many pesticides for crop protection purposes. Organophosphate insecticides have been heavily used and known as a neurotoxicant. Children living agricultural area may have more deleterious effects on health, especially in neurodevelopment. The objective of this study is to be a preliminary study of neurobehavioral battery test for children age between 6-8 years old who living in agricultural area, Pathum Thani Province, Thailand. Fifteen healthy children (7 girls, 8 boys) were recruited and tested. The Behavioral Assessment and Research System (BARS) has been used and developed to assess the neurobehavioral performance in children (Rohlman et al., 2001; Rohlman et al., 2009). Farm children were likely high exposure to pesticide spraying in dry season more than wet season (Petchuay et al., 2006). Many studies showed the association between children and neurobehavioral deficits (Landrigan et al., 1999; Rasoul et al., 2008). The Behavioral Assessment and Research System (BARS) has been used and developed to assess the neurobehavioral performance in children (Rohlman et al., 2001; Rohlman et al., 2009).

The objective of this study is to be a preliminary study of neurobehavioral battery test for children age between 6-8 years old who living in agricultural area, Pathum Thani Province, Thailand.

Keywords: Neurobehavioral tests, Behavioral Assessment and Research System (BARS), Thai children

Participants
Fifteen healthy children (7 girls, 8 boys), ages between 6 to 8 years old were recruited from Khlong 7 agricultural area, Pathum Thani province, Thailand. Most of them were in farmer’s families and resided nearby the paddy fields. Both parent and child were agreed and signed in the consent and assent form prior study. This study was approved by the institutional review board of Chulalongkorn University.

The neurobehavioral tests
The battery test was assembled by combining tests from the Behavioral Assessment and Research System (BARS) and other non-computer based tests. The list of the neurobehavioral battery test were as follow:

- Response and coordination tests were used Finger Tapping, Symbol-Digit, Purdue Pegboard and Visual Motor Integration.
- Memory tests were used Digit Span, Match-to-Sample and Object Memory Test.
- Attention span tests were used Continuous Performance and Divided Attention Test.

The tests and instructions were translated into Thai words. All testers were trained to be standardized. In divided attention test, Chang song (elephant song) was used. As well as object memory test, some items were modified to be suitable for Thai children.

Most of subject can complete all the tests. Boys showed higher score in the tests than girls and these scores were increased by age, except for response speed tests. The response speed and coordination were shown in Figure 5. Number of finger tapping was reduced by age in both male and female. The tapping rates were significantly decreased in divided attention which child must sing a song while tapping.

Boys performed better score in match to sample and object memory tests. The memory skill slightly increased by age in both gender (Figure 6). Overall results from Thai children were comparable to other population with same age range (Rohlman et al., 2007; 2008). The preliminary result will be used to develop the neurobehavioral tests in future.

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