Association of blood cholinesterase with sexual differences in metabolic health risks among villagers from pesticide-treated farming villages

ABSTRACT

The physiological differences between men and women have resulted in discrepancies of pesticides' toxicokinetic and toxicodynamic mechanism. It is speculated that women are more prone to exposure to pesticides than men, which increases the risks to their metabolic health. This study aims to establish a link between long-term, low-level exposure to pesticides and its potential adverse metabolic health risks in farming villages by using the parameters of body composition and acetylcholinesterase activity as indicators. The result indicates that the blood cholinesterase levels in males are proportionally lower than in females. The distinction of farmer and non-farmer as an occupation often shows a different degree of metabolic health symptoms unique to the sex. In addition, the sexual differences in the correlation of the level of blood cholinesterase with the body mass index, visceral muscle, body fat and visceral fat among the farming communities in the same farming village are of considerable interest. These findings provide a mechanistic explanation for women's vulnerability to pesticide exposure and indicate potential opportunities for early prevention and surveillance for these working women in the farming community.

Keyword: Acetylcholinesterase; Body composition; Blood pressure; Sex; Metabolic health risks