

Health risk to neonicotinoid residues of preschool children and general population in China and preschool children in Taiwan

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Outline

1. Introduction
2. Cumulative risk of neonicotinoid residues in Chinese residents
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Abstract

Neonicotinoids (NEOs) are a class of pesticides widely used worldwide, and may migrate to foodstuffs due to environmental contamination and adversely affect human health. This report summarizes NEOs exposure in food for preschool children and general population in China, and for preschool children in Taiwan. A total of 3406 samples collected from China were categorized into 13 food groups to analyze NEO residues by HPLC-MS-MS. The body weight and food consumption data of Chinese were obtained from the World Health Organization Global Environment Monitoring System (GEMS) to calculate the chronic cumulative risk using the relative potency factor method. NEOs concentration ranged from 0.1–1471.43 $\mu\text{g}/\text{kg}$, of which acetamiprid (34.32%) was the top detected NEOs. Chronic risk assessment revealed that exposure to NEOs was within established safety limits (below 1). A total of 128 food samples obtained from Taiwan were aggregated into 32 composite food items and the NEO residues analyzed. Acetamiprid had the highest detection rate of the NEO residues (59.4%), and the concentrations ranged from not detected to 80.5 $\mu\text{g}/\text{kg}$. The estimated daily intake (EDI) of NEO residues among preschool children was found to be lower than the adjusted acceptable daily intake (ADI) even for highly exposed groups, implicated that the risk with present level of NEO residues in the diets for preschool children in Taiwan is acceptable.

References

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