SCREENING LEVEL EXPOSURE ASSESSMENT FOR SELECTED FOOD ADDITIVES AND FOOD CONTAMINANTS AND NUTRIENTS AND COMMONLY CONSUMED FOODS

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BACKGROUND

Ochratoxin A (OTA) and histamine are food contaminants that are present in food as a result of poor storage conditions while glyphosate is a pesticide used in agricultural products. Exposure to high levels of OTA, glyphosate, and histamine may result in health problems.

OBJECTIVES

The study aimed to estimate the exposure and characterize the risk of the Philippine general population, children less than 6 years old, and women of child-bearing age (WCBA) to OTA, glyphosate, and histamine.

METHODOLOGY

The dietary exposure was estimated using individual food consumption data from the Philippine National Nutrition Survey (NNS) 2008 combined with permissible maximum limit (PML) for OTA, maximum residue level (MRL) for glyphosate, and no observed adverse effect level (NOAEL) for histamine set by European Union Commission Regulation No. 123/2005, Philippine Bureau of Agriculture and Fisheries Standards (BAFS), and United States Environmental Protection Agency (EPA), respectively. Risk characterization was evaluated using Margin of Exposure (MOE) approach for histamine poisoning, acceptable daily intake (ADI) for glyphosate, and permissible tolerable weekly intake (PTWI) for OTA.

RESULTS

Results revealed that the Philippine population was minimally exposed to glyphosate at levels within established ADI in which rice (86%) and cereal grains and flours (98%) were observed to be the major contributor to dietary intake. Likewise, calculated margin of exposure for histamine (>100) signifies low risk of the Philippine population to histamine poisoning where unprocessed marine fish (55.95%) was found to be the major dietary source. However, average consumers among the general population were found to be exposed to OTA at levels exceeding the ADI from 86 - 313%. Children and WCBA groups were highly exposed to OTA mainly through consumption of bread and rolls (57%) and maize (31%), respectively.

CONCLUSIONS AND RECOMMENDATIONS

From the exposure estimates of the three contaminants, consumers particularly children and WCBA posed the highest risk to adverse effects of high exposure to OTA. It is therefore recommended to conduct exposure assessment and risk characterization using actual OTA values from cereal grains and flours to further validate the screening exposure assessment results.