



RISK PROFILE OF LEAD IN BROWN SUGAR

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Executive Summary

This study aimed to develop a risk profile of lead in brown sugar based on available secondary data to determine whether the proposed Maximum Limit (ML) of 0.15 mg/kg of the Codex Committee on Contaminants in Foods (CCCF) in April 2023 will provide an appropriate level of protection to the Filipino consuming population. Quantitative research was conducted through literature review and secondary data collection. Risk profiling, as preliminary risk assessment activity, followed the four basic components of risk assessment, which are, (1) hazard identification, (2) hazard characterization, (3), exposure assessment, and (4) risk characterization (FAO/WHO, 2009).

Lead is a toxic metal that naturally occurs in the environment, and largely as a result of anthropogenic activities which contaminate food through deposition in atmosphere, soil, and water during crop production, transport, and processing. Lead affects the body system including neurologic, hematologic, gastrointestinal, cardiovascular, reproductive, and renal systems. Decreased intelligence quotients (IQ) in children and increased risk of hypertension in adults are the significant adverse effects manifested at the lowest blood level concentrations (JECFA, 2011). Exposure assessment to lead at a level of 0.15 mg/kg in brown sugar showed dietary exposure ranging from 0.007 to 0.026 $\mu\text{g}/\text{kg bw}/\text{day}$ for different population groups based on the



mean brown sugar consumption of between 2 to 4 g/day in the Philippines. Children (6 months to 12 years old) have the highest exposure compared to other age groups and vulnerable population. Based on the estimated Margin of Exposure (MOE) of different population groups, the risk estimates of lead exposure from brown sugar showed no appreciable health risk to the Filipino consuming population in terms of reduction in IQ in children or increase in systolic blood pressure in adults. Thus, the proposed ML of 0.15 mg/kg of the CCCF may provide an appropriate level of protection to Filipino consumers considering the average brown sugar consumption used in the study.

It is recommended that the Philippines support the proposed ML of 0.15 mg/kg for soft brown sugar and its subsequent adoption as Philippine National Standard (PNS), specifically the amendment of PNS/BAFS 194:2022 (General Standards for Contaminants in Toxins in Food and Feed [GSCTFF]) once the Codex Alimentarius Commission (CAC) approves the proposed ML by end of 2023.

