

RISKS OF NEUROTOXICITY AND REPRODUCTIVE HAZARD FROM CONSUMPTION OF ACRYLAMIDE IN THAI SNACK FOOD

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Abstract. Acrylamide (ACR), a neurotoxic chemical, is formed during high-temperature cooking. ACR amounts in Thai snacks were determined using a single quadrupole gas chromatography-mass spectrometry (GC-MS) estimated for its exposure risk. Using a questionnaire completed by 650 random participants, 1-90 years of age from 25 randomly selected districts in Bangkok, daily ACR exposure was calculated from intake and frequency of 166 items and ACR exposure risk using a Monte Carlo risk analysis. Potato crisps, sweet potato purple chips and taro chips had the highest ACR levels (396-2,034 $\mu\text{g}/\text{kg}$), with 73.5% of the food samples containing $>100 \mu\text{g}/\text{kg}$ ACR. Mean estimate dietary intake of ACR was 1.22 $\mu\text{g}/\text{kg}$ body weight (bw)/day, with 1.94, 2.19, 2.78, and 2.98 $\mu\text{g}/\text{kg}$ bw/day for females of 9-18, females of 1-8, males of 1-8, and males of 9-18 years of age, respectively. A safe level for ACR exposure determined by the World Health Organization is $<0.8 \mu\text{g}/\text{kg}$ bw/day, indicating children and youths in Thailand were exposed to excessive levels of ACR through consumption of snacks. This hidden risk of ACR toxicity should be taken into consideration by the country's health authorities.

Keywords: acrylamide, health risk, neurotoxicity, snack food, Thailand

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