

Determination of acrylamide in banana based snacks by gas chromatography-mass spectrometry

ABSTRACT

Fried and baked banana-based snacks are popular in South East Asia and banana chip is popular in other countries, such as India, Indonesia, China, African countries, etc; these snacks may contain acrylamide in concentration which may be of concern due to its toxicity. This study was carried out to determine acrylamide concentration in popular banana based snacks in Malaysia using a modified method of gas chromatography-mass spectrometry. The limit of detection and limit of quantitation of the modified method are 5 and 15 $\mu\text{g}/\text{kg}$, respectively. Acrylamide concentration of five types of Malaysian popular fried and baked banana based snacks from different local markets ranged from 74.0 to 7468.8 $\mu\text{g}/\text{kg}$ for banana fritter (pisang goreng), 28.9 to 243.7 $\mu\text{g}/\text{kg}$ for banana chips (kerepek pisang), 160.7 to 500.4 $\mu\text{g}/\text{kg}$ for sweet banana chips (kerepek pisang manis), not detected to 154.4 $\mu\text{g}/\text{kg}$ for banana cake (kek pisang) and 31.7 to 609.1 $\mu\text{g}/\text{kg}$ for banana balls (cekodok pisang). Analysis of variance showed a significant difference ($P < 0.05$) in acrylamide concentration between different food types. From the estimate of banana fritter consumption data, the highest exposure to acrylamide in Malaysia is 1.2 $\mu\text{g}/\text{kg}$ body weights.

Keyword: Acrylamide; Gas chromatography-mass spectrometry; Banana-based snacks