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Heavy metals and caffeine levels in honey of different origin available in UAE

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Statement of the Problem: Honey, a natural product produced by honeybees, is a sweet quick energy source frequently used by humans. Heavy metals and caffeine contamination, depending upon the environmental factors (soil, air, water, temperature, vegetation etc.) and use, may lead to several symptoms such as anxiety, aggression, convulsions, insomnia etc., when present above permissible limits. Thus, their concentrations should be monitored for public health safety.

Aim: The study was undertaken with the objective of analyzing heavy metals and caffeine levels in different brands of honey available in UAE market.

Methodology: Three brands of honey from 10 different countries (n=30) were analyzed in duplicates for heavy metals (iron, zinc, lead and cadmium) using atomic absorption spectrophotometer and caffeine by gas chromatography coupled with mass spectrometry.

Findings: All four heavy metals were present in all the samples in varying concentrations. The highest levels of iron, cadmium, lead and zinc were found in samples from Sudan (1.9 µg/ml), Yemen (0.08 µg/ml), Bulgaria (0.54 µg/ml) and UAE (0.44 µg/ml), respectively. However, all levels were below the permissible limits. Caffeine was highest in samples from Afghanistan (62.0 µg/ml) and Lebanon (52.8 µg/ml), whereas most of other samples contained caffeine between 0-20 µg/ml.

Conclusion & Significance: It was concluded that the heavy metals and caffeine levels in honey samples available in UAE were below the permissible levels and did not pose any health risk to the consumers.

Biography

Victor Raj Mohan Chandrasekaran is an Assistant Professor of Toxicology at Gulf Medical University, UAE. He has completed his Doctorate in Pharmacology and Toxicology at University of Madras in 2006. He completed his Post-doctorate at National Cheng Kung University, Taiwan. His research interests include "Studying the heavy metal contamination in food and cosmetic products, drugs and chemicals induced hepatotoxicity". He has published more than 20 original research articles in peer-reviewed journals and authored two book chapters. His research work has been presented at various international conferences. Currently, his research focuses on "The migration of toxic substances includes phthalates and BPA from storage containers into the food material".

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