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A newly modified QuEChERS method for multiresidue analysis of organochlorines and organophosphates in foods consumed in Trinidad and Tobago

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Pesticides are a group of plant protection chemicals aimed at eradicating pests to improve crop yields. However, pesticides are toxic and can result in carcinogenic and neurologic effects on humans and animals who come in contact with them. Humans can come in contact with pesticides by direct or indirect application in the field or by consuming foods that have pesticide residues remaining after application. Pesticide residue analysis has been given high priority globally since the world's population became much more conscious about the health hazards caused by exposure to pesticide residues. In Trinidad and Tobago, there is still yet to be defined the maximum allowable limit of pesticide residues on produce. Thus, the need for the analysis of pesticide residue levels in foods which form part of a typical "Trinbago" diet. Traditionally, pesticide residue analysis is a laborious process that involves the use of many toxic and expensive chemicals, thus making the routine analysis of food crops for pesticides a deterrent for the average farmer. As such, the quick, easy, cheap, effective, rugged and safe (QuEChERS) method was developed which reduces the sample preparation time and the use of toxic chemicals tremendously. However, the analysis can still be quite expensive. This research aims at developing a cheaper variation to the traditional QuEChERS method. This method has been tested on select organochlorine (OC) and organophosphate (OP) pesticides in selected food matrices. Recoveries ranged from 60-125% with a relative standard deviation <20%. The method was successfully tested on samples from the Chaguanas District, Central Trinidad.

Biography

Grace-Anne Bent was awarded a PhD in Chemistry with high commendations by The University of the West Indies. She is a Lecturer of Chemistry in the Department of Chemistry at The University of the West Indies, St. Augustine Campus, Trinidad and Tobago. Her research interests include: Food safety and security, investigating the chemistry of food and food-related toxins in an effort to minimize human exposure by understanding their mechanisms of interaction (*in vivo* and *in vitro*). She has published: 1 book, 5 journal articles, several newspaper and online articles. She is the main author of a research article which copped the Principal's Research Day Awards for Best Research Publication (UWI, Mona, 2016) and a member of the research team who received the awards: Most Impactful Research Project and Best Research Team – Encouraging Multidisciplinary Research (UWI-NGC Awards, 2016).

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