

Aflatoxins Contamination in Commercially Available Areca Nut and Commercially Prepared Areca Nut Products in Sri Lanka

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The prevalence of aflatoxins is a major concern in various agricultural commodities all over the world due to their harmful health effects including mutagenicity, teratogenicity, and carcinogenicity. Aflatoxins, which are produced by *Aspergillus* species, have been found in a wide range of food products in Sri Lanka in recent years. Areca nut is an addictive substance and is consumed by individuals either alone or as part of the betel quid. It has many adverse health effects, including the development of oral potentially malignant disorders and oral cancer. This study reports the status of aflatoxins contamination in commercial areca nuts and prepared areca products available in Sri Lankan market: fresh nuts, sun-dried nuts (karunka), fermented nuts (mada-puwak) and the sweetened form of areca nut (pani-puwak). High-Performance Liquid Chromatography with fluorescence detection was used to determine the concentration of aflatoxins B1 (AFB1), B2 (AFB2), G1 (AFG1), and G2 (AFG2) in the areca products. Out of the four areca nut products, pani-puwak had the highest level of total aflatoxins (28.5 µg/kg) and AFB1 contamination (23.47 µg/kg), exceeding the European Union's maximum permissible levels established for total aflatoxins (4 µg/kg) and AFB1 (2 µg/kg) in tree nuts. AFB2 and AFG1 concentrations in pani-puwak were 2.05 µg/kg and 2.9 µg/kg, respectively. The other commercial areca nut products did not contain any type of aflatoxins above the limits of detection (AFB1: 0.03, AFB2: 0.01, AFG1: 0.02 and AFG2: 0.01 µg/kg) of the analytical method. The occurrence of aflatoxins in pani-puwak may have resulted from fungal growth during improper storage and/ or processing. Our results suggest that the pani-puwak may pose an additional health risk in addition to its well-known effects, which calls for further assessment, the establishment of legal restrictions, and raising public awareness on areca nut consumption.

Keywords: Aflatoxins, Areca Nut, Contamination, Pani-Puwak, Sri Lanka