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Brazil nuts: Determination of natural elements and aflatoxin

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A study was carried out to evaluate the association of levels of radioactivity, selenium and aflatoxin in shelled Brazil nuts, which were classified in different sizes, for export. The selenium determinations were performed by inductively coupled plasma optical emission spectrometry (LOQ=3.0 μg g^{-1}) and aflatoxins were detected by liquid chromatography-mass spectrometry (LOQ=0.85 μg kg^{-1}), recovery rates were between 92 and 100%. Radioactivity was measured by high-resolution gamma spectrometry. The selenium mean concentration was 22.7±7.4 μg g^{-1}, n=30. Mean activities determined for the following radium isotopes were: 15.77 Bq kg^{-1} for ^{224}Ra, 104.8 Bq kg^{-1} for ^{226}Ra and 99.48 Bq kg^{-1} for ^{228}Ra. For ^{226}Ra, the levels did not vary significantly with nut sizes, although such differences were observed for ^{224}Ra and ^{228}Ra. There was no statistically significant association between the level of selenium and the activity of radionuclides; however, there was correlation between the radionuclides. Aflatoxins above the quantification limit were not found.

Biography

Maristela Martins Pereira completed her PhD in Food Science at Federal University of Santa Catarina, Brazil. She is a Professor in Department of Agricultural Engineering and Soil at Federal University of Amazonas, Brazil.

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