عنوان مقاله:

Detection of pistachio Aflatoxin using Raman spectroscopy and artificial neural networks

محل انتشار:

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خلاصه مقاله:

Pistachio contamination to aflatoxin has been known as a serious problem for pistachio exportation. With regards to the increasing demand for Raman spectroscopy to detect and classify different materials and also the current experimental and technical problems for measuring toxin (such as being expensive and time-consuming),the main objective of this study was to detect aflatoxin contamination in pistachio by using Raman spectroscopy technique and artificial neural networks. Three sets of samples were prepared: non-contaminated (healthy) and contaminated samples with 20 and 100 ppb of the total aflatoxins (B1+B2+G1+G2). After spectral acquisition,considering to the results, spectral data were normalized and then principal components (PCs) were extracted to reduce the data dimensions. For classification of the samples spectra, an artificial neural network was used with a feed forward back propagation algorithm for 4 inputs and 3 neurons in hidden layer. Mean overall accuracy was achieved to be 98 percent; therefore, non-liner Raman spectra data modeling by ANN for samples classification was successful.

کلمات کلیدی:

Aflatoxin, ANN, PCA, Pistachio, Raman spectroscopy

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