Determination of aflatoxin level in peanut using immunoaffinity column combined with ELISA

Harish Chandra¹, Anil Bhatia², O.P. Sidhu², A.R. Nautiyal³ and H.M. Behl²

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Abstract

Peanut (Arachis hypogaea L.) is a largest source of edible oil in India, extensively consumed in the central and western parts of the country. The variability in the total aflatoxin and aflatoxin B₁ levels in the different peanut samples collected was investigated. Quantitative analysis of total aflatoxin and aflatoxin B₁ (AFB₁) content was performed by competitive ELISA micro plate reader using total aflatoxin and aflatoxin B₁ test kit. All the seed samples investigated were found positive for aflatoxin. The total aflatoxin content ranged from 24.53 to 250.34 ppb, whereas the concentration of AFB₁ was in the range of 18.55 to 234.50 ppb. More than 86% of samples showed aflatoxin content above regulatory limits. 40% of the samples showed high levels (> 100 ppb) indicating high health risk of exposure to aflatoxin. Aflatoxin contamination of peanut seeds and oil is therefore an important public health concern. More precaution should be taken for proper storage of peanut seeds in order to prevent microbiological and chemical hazards.

Keywords: Peanut, Arachis hypogaea, aflatoxins, aflatoxin B₁, ELISA