

A novel method for aflatoxin analysis in herbal products by using alternate standard

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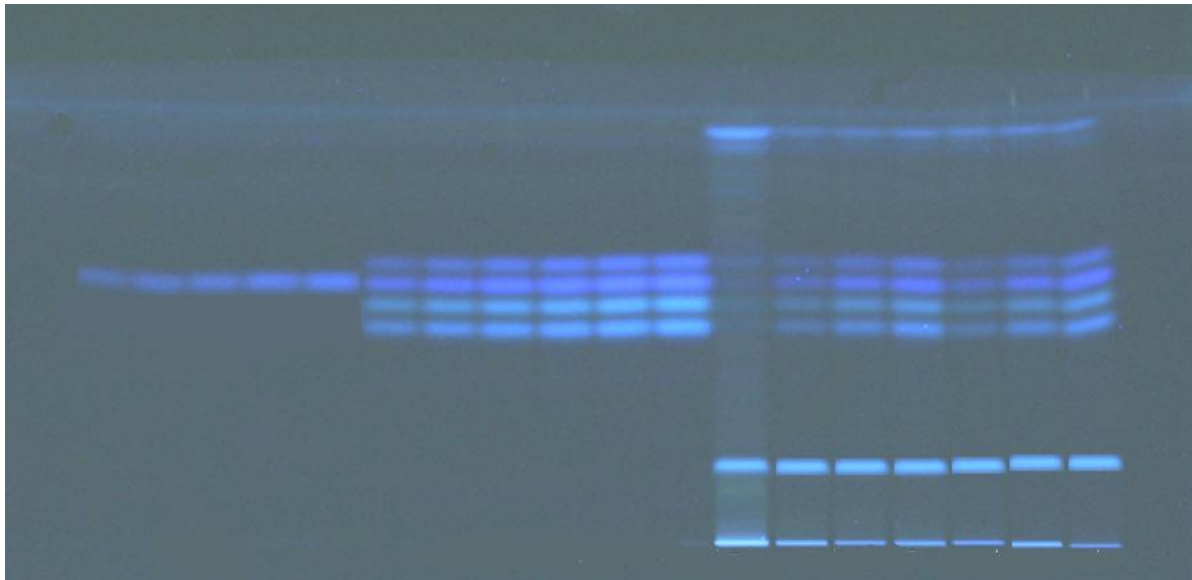
Abstract:

Aflatoxins (B1, B2, G1 and G2) are expensive (Rs.1.3 lac for 10 mg each), highly toxic, carcinogenic, difficult to obtain and store, and light sensitive. Experts are required to handle, use, store and destroy them. They require separate laboratory space, license for purchase and storage. Therefore there is a need of alternative standards for the analysis of these aflatoxins. In the current work we found out a cost effective alternate standard for analysis of aflatoxins using HPTLC, which is stable, nontoxic, noncarcinogenic, easy to purchase and affordable to the small Indian manufactures and researchers.

Alternate standard 7-hydroxy coumarin was used for the analysis of aflatoxins in herbal products using HPTLC technique and the results were compared with original aflatoxins (B1, B2, G1 and G2) analyzed by HPTLC and HPLC. Aflatoxins were extracted from samples using dichloromethane. Extract obtained was evaporated and reconstituted with toluene: acetonitrile (98:2, v/v). Samples were spotted using CAMAG Linnomat V on HPTLC plate (Silica gel F₂₅₄, Merck), analyzed with mobile phase chloroform: acetone: water (28:4:0.06, v/v/v) and scanned at 366 nm. All the aflatoxins were resolved and attained R_f values 0.64, 0.60, 0.56 and 0.52 respectively. The method was validated as per ICH guidelines. Response of the analytes was linear over the concentration range of 200- 3600 Pg ($r^2=0.9994$).

Quantitation of the sample with respect to the alternate standard and actual standards showed similar response values. The results generated using the two techniques, HPLC and HPTLC clearly justifies the fact that aflatoxin standards can be effectively substituted by an alternative standard 7-hydroxy coumarin.

Keywords: Alternate standard, HPTLC, Aflatoxins



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18

Track No.	Name of Standard/Sample
1-5	Alternate standard (7-OH Coumarin)
6-11	Aflatoxin Standards (B1,B2,G1,G2)
12-18	Groundnut Sample