

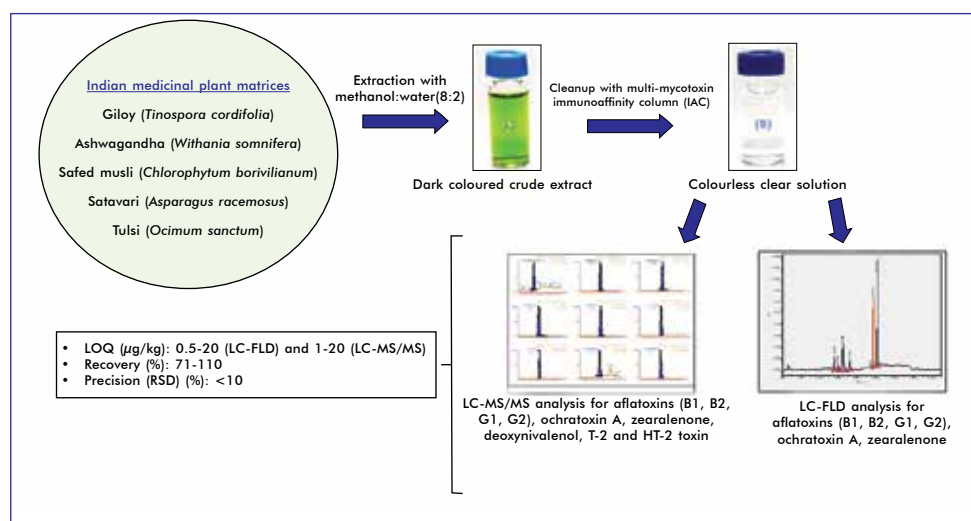
Method for multi-mycotoxin analysis in Indian medicinal herbs

Although medicinal plants are in huge demand across the world for their health promoting effects, they can pose potential health concern to consumers if contaminated with mycotoxins. That's why a standardized method is of utmost importance to analyse these contaminants in medicinal plant matrices. The unavailability of such standardised methods for analysing multiclass mycotoxin was realized and a process was optimized following a single chromatographic run but with lower LOQs with desired selectivity and sensitivity from consumer safety point of view. This study reports a method to estimate nine regulated mycotoxins in a range of Indian medicinal plants including giloy (*Tinospora cordifolia*), ashwagandha (*Withania somnifera*), safed musli (*Chlorophytum borivilianum*), satavari (*Asparagus racemosus*) and tulsi (*Ocimum sanctum*).

Objective: To develop and validate an analytical method for analysis of multiple mycotoxins in medicinal plant matrices.

The sample preparation involved extraction of homogenised matrices (12.5 g) using methanol:water (8:2, 100 mL) followed by cleanup through a unique multi-mycotoxin immunoaffinity column (IAC). The method was initially developed and validated using liquid chromatography tandem mass spectrometry (LC-MS/MS) for the simultaneous analysis of aflatoxins (B1, B2, G1, G2), ochratoxin A, zearalenone, deoxynivalenol, T-2 and HT-2 toxin. Later, it was validated using LC-fluorescence (LC-FLD) for aflatoxins, ochratoxin A and zearalenone. Compared to LC-FLD, it was possible to attain a lower limit of quantification (LOQ) with LC-MS/MS for all the tested analytes except aflatoxins. However, the recoveries of targeted analytes were ranging between 71-110% with precision (RSD) of ≤10% across the matrices tested.

Commercial potential: This technology can be scaled up for quality control and/or quality assurance purposes in terms of qualitative as well as quantitative



estimation of mycotoxins in real life samples (raw drugs, herbal products, supplements, etc.). The analytical method will be useful for research and development sector of various herbal industries to assure the quality of their products for domestic as well as overseas market.

For further interaction, please write to:

Dr Rohan Sarkar (Scientist), ICAR-Directorate of Medicinal and Aromatic Plants Research, Boriavi, Anand, Gujarat 387 310.

*Corresponding author: rohan.sarkar@icar.gov.in