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SOME STUDIES ON THE TECHNIQUES AVAILABLE FOR
AFLATOXIN ANALYSIS AND THEIR APPLICATION



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ABSTRACT

Several methods had been established for aflatoxin analysis. However, the choice of an appropriate technique depends on a number of factors such as the extent of laboratory facilities available, the matrix of food item, etc. It was concluded that (i) The AOAC (CB) method as modified by Roberts and using Sep-pak cartridge was the most appropriate for the food items considered here (ii). If the Pons method is used, the acetone/water mixture should be originally specified (70:30) and not changed to 85:15 as given later by Pons (iii). Solvent extraction (n-hexane) as implied by the TPI G-70 report should not be practiced, even if it means the use of additional solvent in the AOAC (CB) clean-up technique, because it leads to low recoveries. Results also showed that the HPLC (fluorescence) technique was most sensitive (0.52-2 ng) and reproducible (coefficient of variation = 10%). The TLC densitometric (fluorescence) method was not far behind (sensitivity = 2.3 ng. CV = 10-20%). The TLC visual technique was least reproducible (CV = 20-40%) and its sensitivity was only 5 ppb. The range of aflatoxins in rubber seed lay most frequently between 0-200 ppb. Rubber seed meal and oil was also analysed for aflatoxin contamination. Aflatoxin in rubber seed oil (5-20 ppb) can be degraded by sunlight provided it is purified to remove a brown pigment. Nearly 150 samples of maize and a maize based product was analysed for aflatoxin using the AOAC (CB)/Roberts/HPLC technique. Results showed contamination levels were mainly in the region of 5-50 ppb. This is an important factor as maize is used as a raw material in infant and invalid food in this country. These techniques can be used when looking for aflatoxins at level above 5 ppb in spices also.