

SCREENING OF MYCOTOXINS IN CHILEAN MAIZE. A PRELIMINARY REPORT

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A method for simultaneous analysis of aflatoxins B₁, B₂, G₁, G₂, zearalenone, sterigmatocistin, diacetoxycirpenol, T-2 toxin, ochratoxin A, citrinin and penicillic acid was established.

The analytical developed methodology was based on two methods described in the literature (1) (2). The resulting procedure can be described as follows:

- sample plus chloroform and phosphoric acid 0.2 N was extracted by using an ultraturrax homogenizer for 3 minutes.
- the extract was filtered through filter paper Whatman N° 1 with anhydrous sulphate sodium.
- evaporation up to dryness in a rotary evaporator and redissolution in chloroform for chromatography; if the resulting extract was too dirty a clean up with dialysis was used.
- extracts were chromatographed in a silicagel plate using toluene; ethyl acetate: formic acid (90%)-6:3:1 v/v and compared with standards of mycotoxins. The suspicious samples with any of the toxins tested were chromatographed using two dimensional TLC against the specific mycotoxin and a confirmatory test was assayed (3).

The method was used in the analysis of maize samples obtained by the Instituto de Investigaciones Agropecuarias as an activity of the INIA-PNUD-FAO-CHI 83-006 project: "Decrease of post-harvest grain damage". The most common species of micological contamination found, were *Pusarium*, *Penicillium* and *Aspergillus*. The findings of contaminated fungi are summarized in Table I.

Heretofore twenty eight samples were analyzed. Two samples resulted contaminated with penicillic acid and one with ochratoxin A. Both of them were quantified by spectrophotodensitometry. Excitation wave length, linearity range, detection limit and quantitation limit are listed in Table II.

In spite of that only about 30% of the collected samples have been analyzed, positive samples found up until now show the importance that mycotoxins can have in Chile. An expanded survey will be very useful to authorities concerned with their regulation in this field.

TABLE I
Incidence of different varieties of fungus found as contaminants
in Chilean maize sample

FUNGI	NUMBER OF CONTAMINATED SAMPLES	PERCENTAGE OF CONTAMINATED SAMPLES
Penicillium sp.	28	100.0
Fusarium sp.	26	92.8
Aspergillus niger	22	78.6
Aspergillus glaucus	20	71.4
Aspergillus flavus	18	64.3
Aspergillus ochraceus	8	28.6
Aspergillus tamarii	6	21.4
Cladosporium sp.	6	21.4
Nigrospora	5	17.9
Alternaria	4	14.3
Tricoderma	2	7.1
Epicoccum	2	7.1

TABLE II

	OCHRATOXIN	PENICILLIC ACID
Excitation wave length	313 nm	366 nm
Linearity range	20-120 ng/spot;R:0.9993	400-48000 ng/spot;R:0.9985
Detection limit	0.6 ng/spot	15.8 ng/spot
Quantitation limit	1.9 ng/spot	46 ng/spot
Concentration of mycotoxins found	55 ppb	5.5 ppm and 2.3 ppm

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