

CONTAMINATION OF GUATEMALAN COTTONSEED OIL WITH MOLD METABOLITES

Dear Sir:

Cottonseed oil, produced locally, is the main edible oil consumed in Guatemala. Quality control analyses carried out in our laboratory¹ for nine years have revealed invariably the presence of an extraneous substance in the oil. This material is neither a natural component nor an additive used to lengthen the shelf-life of this commodity.

The extraneous component can be detected in the unsaponifiable fraction by thin layer chromatography (TLC) assays. With this technique, an intensely fluorescent, aquamarine colored band can be observed. The location of the fluorescence is immediately above the band corresponding to the sterol fraction.

Contamination with aflatoxin was discarded after TLC assays showed that the fluorescent band of the oil has a different R_f than the one related to the mycotoxin.

In order to investigate if the compound is produced by mold infestation of the cotton plants, ground seeds were placed in a favorable medium for fungal growth. After a few days, several kinds of molds were present in the Petri dishes. Every one of them was isolated in order to obtain pure colonies.

One of these cultures produced pigments extractable in diethyl ether. A solution of these pigments, obtained after washing the Petri dishes with the solvent, was assayed by means of TLC. The presence of several resolved yellow pigments and a fluorescent band similar to the one in the oil could be observed in the plates.

This mold was identified as *Aspergillus chevalieri*. Pure cultures of this mold were obtained from the Northern Research

1 Laboratorio Unificado de Control de Alimentos y Medicamentos (LUCAM).

Laboratory collections. This culture was compared with the local strains by TLC. In both cases the yellow pigments and the aquamarine fluorescence were present.

It has not been possible to establish unequivocally that the fungal metabolite from *A. chevalieri* is the same material found in the oil. It must be mentioned here that fluorescent bands have been observed in the unsaponifiable fraction of palm and rubber seed oils produced in Central America. It is possible that these fluorescent compounds present in vegetable oils produced in the tropics have their origin in mold infestation of the crops.

In order to verify this hypothesis further work is necessary in connection with the identification of the molecular structure of the fluorescent compound. Studies to find out the effects of this substance in the diet of the population should be carried out also.

A final observation is that this compound survives the hydrogenation process. The fluorescence can be detected in margarines and shortenings derived from cottonseed oil.

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