Monitoring and control of mycotoxins in foodstuffs in Cyprus 1997-2006

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AOAC INTERNATIONAL WORKSHOP
“Foods to Dye for – Contaminants – sampling, analysis, legal limits”
Monday 6th – Tuesday 7th November, 2006, Limassol, Cyprus
Environmental & Other Food Contamination and Natural Toxins Lab

is one of the eleven food laboratories of the State General Laboratory

- **Official control Laboratory** for surveillance, monitoring and applied research in the field of food contaminants

- **Designated as the Cyprus National Reference Laboratory (NRL) for Mycotoxins, PAHs and heavy metals**

- **Accredited since 2002 according to ISO/IEC 17025:2005 by the Greek Accreditation Body ESYD in five methods in the field of contaminants, including mycotoxins**

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QUALITY CONTROL

In above, the laboratory participates in several collaborative trials and PT rounds with satisfactory results.

FAPAS, CHEK, IMEP, CRL-ISS

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Equipment

The laboratory is equipped with high technology instruments:

HPLCs with various detectors
GF-AAS
ICP, ICP-MS, GC-MS, and other equipments
Official sampling, inspection and enforcement is performed by the:

- **Medical and Public Health Services (MPHS)** of the Ministry of Health and the **Veterinary Services (VS)** of the Ministry of Agriculture, Natural Veterinary Services (VS) Resources and Environment, for **raw and some processed animal origin foodstuffs**
Programmes

Sampling, Monitoring and Control Programmes are planned annually and contracted at the beginning of each year (since 1993) in cooperation between the SGL and the sampling authorities.

The samples, locally produced and imported, are collected according to a specific sampling plan, based on the relevant EU requirements, at critical control points (HACCP approach) such as:

import, primary storage, premises, processing places, market
Analytical methods

IAC clean up
followed by HPLC/fluorescence or UV/PDA detection

• AOAC 991.31 for Aflatoxins B1, B2, G1 and G2
• AOAC 2000.08 (first action), for Aflatoxin M1
• Journal of AOAC International, Vol. 84, No. 6, p. 1818 – 1827 for OTA
• Central Science Laboratory (2001), Zearalenone Collaborative trial 130
• Central Science Laboratory (2001), Deoxinivalenone Collaborative trial 130
• CEN N 320 for Patulin determination
RESULTS & DISCUSSION

The evaluation of the results until May 2004 was carried out according to Cyprus legislation and then according to the EU legislation.

The control includes inspection, sampling, retention, analysis, and destruction or re-export to the country of origin of lots with AFs levels above MLs.
**Aflatoxins**

Most of the examined samples (nuts, cereals, dried fruit, spices) were within the relevant EU levels for aflatoxins, except for some samples, especially the imported ones such as peanuts, pistachios where were found to be above the relevant EU MLs (total AFs = 4 µg/kg and AF B₁ = 2 µg/kg).

Concerning **aflatoxin M1** only a small percentage of the examine samples (milk) were found to be positive.
- **Ochratoxin A**
  
  (cereals, raisins, wine, coffee and baby food), were found to be positive,
  
  with wine samples to be 100% positive.

- **Patulin**

  in apple juice & puree, and baby food
  
  ranged from non detectable (ND) to 13 ppb
Fusarium Toxins

(Deoxynivalenol, Zearalenone, Fumonisines FB₁ & FB₂)

ranged from ND to 113 ppb, at least for the samples examined.

The limited number of analysed samples do not allow us to reach in a conclusion about the overall occurrence of fusarium toxins in foodstuffs.
CONCLUSIONS

➢ The results indicate **the effectiveness** of **monitoring**, as well as the **need** for constant surveillance and control especially, at **critical control points**, in order to prevent unfit products entering the Cyprus and EU market.

➢ The control must be expanded more systematically to cover all the **fusarium toxins**.
THANK YOU FOR YOUR ATTENTION
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MONITORING PROGRAMME OF AFLATOXIN (HACCP) IN CYPRUS 1990-2006

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INCIDENCE OF OCHRATOXIN A IN FOODSTUFFS IN CYPRUS

% POSITIVE SAMPLES

1997-2006

RAISINS
CEREALS
COFFEE
BABY FOOD
WINE

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