

## Forensic mycotoxicosis investigation of an infant death case

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A forensic investigation of a six week old infant death case was conducted to detect evidence of a lethal mycotoxin intoxication. Routine liver and blood autopsy materials were analyzed for the presence of mycotoxins.

The infant death occurred in a home (Texas, USA) with significant water damage and microbial contamination with *Stachybotrys* spp., *Aspergillus* spp., *Penicillium* spp. and *Chaetomium* spp., among others. The only forensic pathological findings were a „moderate to severe vascular lung congestion“and „focal macrovascular steatosis of the liver“; routine toxicological blood tests (i.e., drug screen, alcohol and medications) were negative. The liver and blood from the infant was analyzed by use of HPLC for the presence of ochratoxin A [1, 2] and none was detected.

In addition, an immuno-chemical assay for the presence of *Stachybotrys chartarum* derived trichothecenes mycotoxins was conducted (QuantiTox Kit for Trichothecenes, EnviroLogix, Portland, USA) on the autopsy materials and control samples. The test assay kit was designed for the quantitative laboratory detection of trichothecenes including Roridin A, E, H and L-2, Satratoxin G and H, Isosratoxin F, Verrucaridin A and J, and Verrucarol. The assay's quantitative range is from 0.2 to 18 parts per billion (ppb) of Roridin A in the sample extract.

In an untreated infant liver specimen a mean 11.68 ppb Roridin A-equivalent/g was detected. Control matrix effects (positive/negative controls) were tested on pig liver specimens; these tests were all satisfactory, excluding a potential matrix effect. A mass spectrometric confirmation of the assays findings (by the Technical University of Denmark) was not achievable due to technical problems; the remaining test sample quantity and the recovery rate of this method were not sufficient (<10%). The formalin treated lung specimen suggested a positive finding of trichothecenes (EIA-result (3.05 ppb)); however, the formalin treated negative control showed that this was a false-positive result.

In conclusion, these findings strongly suggest a causal relationship between an exposure to trichothecenes producing *Stachybotrys* fungi and the trichothecenes findings in the liver of the deceased infant. For a mass spectrometric confirmation of the ELISA findings routine autopsy materials are not adequate. Frozen specimens without chemical preservation are sought in forensic mycotoxicosis investigation.

[1] Curtui, V.G. and Gareis, M. (2001) Food Additives and Contaminants, 18, 635-643

[2] Scheuer et al. (1997) Proceedings 19. Mycotoxin Workshop, Munich, Germany, pp 142-146