

# Survey on sterigmatocystin in food

Area of research interest: [Chemical hazards in food and feed](#)

Study duration: 2014-03-01

Project code: FS102055

Conducted by: Fera

[Back to top](#)

## Background

Sterigmatocystin is a mycotoxin produced by fungi of the genus *Aspergillus* (mainly *A. nidulans* and *A. versicolor*) as well as by other species. It is genotoxic and carcinogenic. Sterigmatocystin can occur in grains and grain-based products due to fungal infestation especially at the post-harvest stage.

In 2013, the European Food Safety Authority (EFSA) Panel on Contaminants in the Food Chain (CONTAM) published its scientific opinion on the risk for public and animal health related to the presence of sterigmatocystin in food and feed. However, the risk to human health could not be characterised due to lack of suitable occurrence data on sterigmatocystin. Following this, EFSA issued a call for proposals to obtain representative occurrence data of sterigmatocystin in 1000 food samples with special focus on grains and grain-based foods for human consumption from different geographic regions in Europe. The data obtained would serve as supporting information to the CONTAM panel for future exposure assessments for sterigmatocystin.

[Back to top](#)

## Research Approach

This work was part of an extensive European Union survey on sterigmatocystin in food tendered by EFSA to gain an insight into the occurrence of sterigmatocystin especially in cereals and cereal-based products as consumed in the EU. Five organisations from the UK came together to carry out this survey. This report details the UK contribution to the data. The UK aspect of the project was co-funded by the Food Standards Agency.

277 UK samples consisting of cereal grains (93) and cereal products (184) were taken at various points in the food chain including primary production, storage, import activities, processing plants (mills), wholesale, and retail. 8% of samples were from organic production.

Samples were analysed using a highly sensitive analytical method based on liquid-chromatography with tandem mass spectrometry (LC-MS/MS) for the presence of sterigmatocystin. The analytical methods were validated and were in compliance with European legislation on methods of analysis for mycotoxins in food (Commission Regulation (EC) No 401/2006 as amended). The limit of detection ((LOD), the lowest concentration which can be detected) was 0.1 µg/kg. It had been agreed by EFSA that the labs should work to a limit of quantification ((LOQ), the lowest concentration which can be quantitatively determined with suitable precision and accuracy) of 0.5 µg/kg; however, Fera Science Ltd (who performed the

analyses) was able to work to a lower LOQ of 0.2 µ/kg.

[Back to top](#)

## Results

Sterigmatocystin was detected at low levels in 44 samples of unprocessed cereal grains and processed cereal products. In 32 samples, sterigmatocystin was present between the LOD and LOQ of 0.5 µg/kg, with levels ranging from 0.1 µg/kg to 0.49 µg/kg. 12 samples contained sterigmatocystin above the LOQ; levels ranged from 0.56 - 1.41 µg/kg. The highest level was found in a processed cereal product sample (wholemeal rye crisp bread) at 3.65 µg/kg. Rice and oats grains were most likely to contain sterigmatocystin. In general, these results were in line with those obtained in the wider European survey.

A risk assessment based on EFSA's scientific opinion led to the conclusion that the levels observed in this survey would be of low public health concern.

This survey captures a first look at the occurrence of sterigmatocystin in food products grown and consumed in the EU. The data generated from this survey have been submitted to EFSA to contribute to their risk assessments.

Research report

### England, Northern Ireland and Wales

PDF

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