

## **The incidence of citrinin in the Belgian food and feed chain and the risk for human and animal health [1]**

Project duration:

October 1, 2016

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September 30, 2020

### **In short**

Citrinin (CIT) is a mycotoxin produced by several fungi in grains, beans, fruits, vegetables, herbs and spices. Its carry-over into animal products is expected. There is much concern about this mycotoxin with regard to food safety and more data on the toxicity and the occurrence of CIT in food are needed for the improvement of the health risk assessment by the European Food Safety Authority (EFSA). Therefore the Member States have been requested to monitor the levels of CIT in food and feed.

### **Project description**

The European Food Safety Authority (EFSA) published in 2012 a scientific opinion on citrinin (CIT) whereby the need for additional quantitative occurrence and toxicity data was emphasised in order to perform a risk assessment regarding the presence of CIT in food and feed (EFSA 2012).

An integrated approach will enable the research partners to gather information on the occurrence of CIT in feed and different foodstuffs available on the Belgian market with focus on the discovery of all relevant sources of intake and their importance. Sciensano provides the necessary reference materials (RM) to be mixed with the basic feeds for animal experiments depending on the occurrence data of CIT in the different matrices.

Furthermore, the toxicokinetics and absolute oral bioavailability for CIT in broiler chickens and pigs, and carry-over to edible tissues (kidney and muscular tissue from pigs and broiler chickens; eggs from laying hens) will be investigated. Pigs may also serve as toxicokinetic model for humans, given the anatomical and physiological similarity of inter alia the gastro-intestinal tract, liver and kidneys. Currently, one phase I metabolite of CIT has already been described, i.e. dihydrocitrinone (HD-CIT), but the use of high resolution mass spectrometry (HRMS) will enable us to explore other potential phase I and II metabolites to unravel its biotransformation.

This will enable the research project to realize the following objectives:

1. Optimise and validate suitable (U)HPLC-MS/MS methods to determine CIT in feed, 10 different food groups and different edible tissues of animal origin
2. Gather quantitative occurrence data on CIT in 10 different food groups (total of 400 samples) and 100 feed samples available on the Belgian market
3. Determine the toxicokinetic profile of CIT in pigs and broiler chickens and determine the absolute oral bioavailability in these species
4. Determine the carry-over of CIT from feed to animal products for human consumption
5. Evaluate the toxicity and organ damage in pigs, broiler chickens and laying hens
6. Explore potential phase I and II metabolites using HRMS
7. Perform a risk assessment in Belgium

## **Sciensano's project investigator(s):**

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## **Service(s) working on this project**

[Organic contaminants and additives](#) [3]

## **Partners**



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## **Financial Source**



[Federal Public Service \(FPS\) Public Health, Food Chain Safety and Environment](#)  
[4]

[Food consumption and food safety](#) [5]

[Animal health](#) [6]

## **Associated Health Topics**

[Food consumption and food safety](#) [5]

[Animal health](#) [6]

1. [Mycotoxin](#) [7]
2. [Citrinin](#) [8]
3. [occurrence](#) [9]
4. [food safety](#) [10]
5. [feed](#) [11]
6. [Belgium](#) [12]
7. [toxicokinetics](#) [13]
8. [broiler chickens](#) [14]
9. [pig](#) [15]
10. [biotransformation](#) [16]

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### Links

[1] <https://www.sciensano.be/en/projects/incidence-citrinin-belgian-food-and-feed-chain-and-risk-human-and-animal-health> [2] <https://www.sciensano.be/en/people/emmanuel-tangni> [3] <https://www.sciensano.be/en/about-sciensano/sciensanos-organogram/organic-contaminants-and-additives> [4] <https://www.sciensano.be/en/partners/federal-public-service-fps-public-health-food-chain-safety-and-environment> [5] <https://www.sciensano.be/en/health-topics/food-consumption-and-food-safety> [6] <https://www.sciensano.be/en/health-topics/animal-health> [7] <https://www.sciensano.be/en/keywords/mycotoxin> [8] <https://www.sciensano.be/en/keywords/citrinin> [9] <https://www.sciensano.be/en/keywords/occurrence> [10] <https://www.sciensano.be/en/keywords/food-safety> [11] <https://www.sciensano.be/en/keywords/feed> [12] <https://www.sciensano.be/en/keywords/belgium> [13] <https://www.sciensano.be/en/keywords/toxicokinetics> [14] <https://www.sciensano.be/en/keywords/broiler-chickens> [15] <https://www.sciensano.be/en/keywords/pig> [16] <https://www.sciensano.be/en/keywords/biotransformation>