



European
Commission

Directorate-General for Health & Food Safety

Glycoalkaloids

EFSA opinion on glycoalkaloids in feed and food

EFSA Risk assessment (2020) of glycoalkaloids in feed and food, in particular in potatoes and potato-derived products

In humans, no evidence of health problems associated with repeated or long-term intake of glycoalkaloids via potatoes has been identified. No reference point for chronic exposure could be identified from the experimental animal studies.

Occurrence data were available only for α -solanine and α -chaconine, mostly for potatoes.

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The acute dietary exposure to potato glycoalkaloids was estimated using a probabilistic approach and applying processing factors for food. Due to the limited data available, a margin of exposure (MOE) approach was applied. The MOEs for the **younger age groups indicate a health concern** for the food consumption surveys with the **highest mean exposure, as well as for the P95 exposure** in all surveys. For **adult age groups**, the MOEs **indicate a health concern only** for the food consumption surveys with **the highest P95 exposures**.

EFSA opinion on glycoalkaloids in feed and food

For horses, farm and companion animals, no risk characterisation for potato glycoalkaloids could be performed due to insufficient data on occurrence in feed and on potential adverse effects of glycoalkaloids in these species.

Monitoring of glyco-alkaloids in food

- [Commission Recommendation \(EU\) 2022/561](#) of 6 April 2022 on monitoring the presence of glycoalkaloids in potatoes and potato-derived products
- Monitoring of glycoalkaloids α -solanine and α -chaconine in potatoes and potato products.
- If possible, the degradation products β - and γ - solanine and chaconine and the aglycon solanidine should also be analysed, in particular in processed potato products.

Monitoring of glyco-alkaloids in food

To prevent enzymatic degradation of α -chaconine in particular when analysing raw potatoes (unpeeled/peeled), a solution of 1 % formic acid in methanol should be added to the potatoes in a ratio of 1:2 (volume:weight) when they are blended and homogenized before extraction and clean-up.

The recommended methods of analysis are liquid chromatography with ultraviolet photodiode-array detection (LC-UV-DAD) or liquid chromatography mass spectrometry (LC-MS). Other methods of analysis can be applied provided that evidence is available showing that they generate reliable results for individual glycoalkaloids. The limit of quantification (LOQ) for the determination of each glycoalkaloid should preferably be around 1 mg/kg and not be higher than 5 mg/kg.

Monitoring of glyco-alkaloids in food

Member States, with the active involvement of food business operators, should carry out investigations to identify the factors leading to levels above the indicative level of 100 mg/kg as sum of α -solanine and α -chaconine in potatoes and processed potato products.

Member States and food business operators should provide occurrence data to EFSA by 30 June of each year.

It is important to report for potatoes and processed potato products the variety and the size of potatoes (average weight of the potatoes, in particular for unpeeled potatoes), early potatoes or storage potatoes (i.e. mature and/or stored over a longer period of time), the place of sampling (producer, wholesale, retail) and if the potatoes were peeled or not .

Recent issues and outlook

- [Notification 2023.7694](#) - November 2023
Health risk related to compound feed for dogs and cats containing glycoalkaloids
- Glycoalkaloids in potato flakes for pet food.

Outlook on

- Glycoalkaloids in food
- Glycoalkaloids in feed



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**Thank you for
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attention !**