

# RECOMMENDATIONS

## COMMISSION RECOMMENDATION (EU) 2022/561

of 6 April 2022

### on monitoring the presence of glycoalkaloids in potatoes and potato-derived products

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 292 thereof,

Whereas:

- (1) The European Food Safety Authority (EFSA) Panel on Contaminants in the Food Chain (CONTAM) adopted a risk assessment in 2020 on glycoalkaloids in feed and food, in particular in potatoes and potato-derived products <sup>(1)</sup>.
- (2) In humans, acute toxic effects of potato glycoalkaloids ( $\alpha$ -solanine and  $\alpha$ -chaconine) include gastrointestinal symptoms such as nausea, vomiting and diarrhoea. For these effects, the CONTAM Panel identified a lowest-observed-adverse-effect level (LOAEL) of 1 mg total potato glycoalkaloids/kg body weight (bw) per day as a reference point for the risk characterisation following acute exposure. A margin of exposure (MOE) higher than 10 indicates that there is no health concern. This MOE of 10 takes into account the extrapolation from a LOAEL to a no-observed-adverse-effect (NOAEL) (a factor of 3) and the interindividual variability in toxicodynamics (a factor of 3,2). Given that acute exposure estimates in certain exposure scenarios resulted in a MOE lower than 10, this indicates a health concern.
- (3) The CONTAM Panel recommended that more occurrence data should be gathered on glycoalkaloids and their aglycones in the potato varieties available on the market, in new potato varieties resulting from breeding experiments and in processed potato products, including foods for infants.
- (4) Good agricultural practices, good storage and transport conditions and good manufacturing practices can reduce the presence of glycoalkaloids in potatoes and processed potato products. More information must however be gathered on the factors that lead to relatively high levels of glycoalkaloids in potatoes and processed potato products in order to be able to identify the measures to be taken to avoid or reduce the presence of glycoalkaloids in these foodstuffs. It is appropriate, if possible, to analyse in particular in processed potato products also the degradation products  $\beta$ - and  $\gamma$ - solanine and chaconine and the aglycon solanidine, given that these compounds have the same toxicity as  $\alpha$ -solanine and  $\alpha$ -chaconine.
- (5) The results of the monitoring of glycoalkaloids must be reliable and comparable. It is therefore appropriate to provide instructions on their extraction as well as requirements for their analysis. As the presence of glycoalkaloids is higher in unpeeled potatoes than in peeled potatoes, and higher in small potatoes than in larger potatoes, it is important to provide information on these factors when reporting occurrence data.
- (6) To advise on when it would be appropriate to identify the factors leading to relatively high levels of glycoalkaloids, it is appropriate to establish an indicative value for potatoes. It is also appropriate to obtain more information on the effects of processing on the level of glycoalkaloids.

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<sup>(1)</sup> EFSA CONTAM Panel (EFSA Panel on Contaminants in the Food Chain), 2020. Scientific Opinion – Risk assessment of glycoalkaloids in feed and food, in particular in potatoes and potato-derived products. EFSA Journal 2020;18(8):6222, 190 pp. <https://doi.org/10.2903/j.efsa.2020.6222>.

- (7) It is therefore appropriate to recommend the monitoring of glycoalkaloids in potato and potato products and the identification of the factors resulting in their high levels, and to gather more information on the effects of processing on the level of glycoalkaloids,

HAS ADOPTED THIS RECOMMENDATION:

- (1) Member States with the active involvement of food business operators should monitor glycoalkaloids  $\alpha$ -solanine and  $\alpha$ -chaconine in potatoes and potato products. If possible, the degradation products  $\beta$ - and  $\gamma$ -solanine and chaconine and the aglycon solanidine should also be analysed, in particular in processed potato products.
- (2) To prevent enzymatic degradation of  $\alpha$ -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.
- (3) 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  $\alpha$ -solanine and  $\alpha$ -chaconine in potatoes and processed potato products.
- (4) Member States and food business operators should provide to EFSA, by 30 June of each year, the data for the previous year for compilation into one database in line with the requirements of EFSA's Guidance on Standard Sample Description (SSD) for Food and Feed and EFSA's additional specific reporting requirements <sup>(?)</sup>. 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 <sup>(?)</sup>.

Done at Brussels, 6 April 2022.

*For the Commission*  
Stella KYRIAKIDES  
*Member of the Commission*

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<sup>(?)</sup> <https://www.efsa.europa.eu/en/call/call-continuous-collection-chemical-contaminants-occurrence-data-0>

<sup>(?)</sup> Tests on the effect of peeling on the content of glycoalkaloids should be performed with a (potato) peeler.