

ESA FACTSHEET

on Pyrrolizidine alkaloid contaminations in culinary herbs and spices

European Spice Association (ESA) member companies and national associations ensure that foods intended for distribution comply with the general principles, requirements and regulations of European food law and are fit for human consumption.

Pyrrolizidine alkaloids (PA) are a large group of natural toxins produced by a variety of plants to protect against external stress factors such as herbivores or climatic conditions. More than 6,000 plant species, mainly weeds from the botanical families of the Boraginaceae, Asteraceae and Fabaceae, biosynthesize PA. With few exceptions (e.g. borage), herbs and spices do not form toxic PA. The risk of contamination lies with the PA-containing weeds in the different regions of the world.

The spice industry has identified potentially affected products and ESA supports companies and associations in the countries of origin in the education and training of growers in these areas. In the past years amounts of PA levels in affected herbs and spices have been reduced significantly.

ESA recognises the difficulties growers face in controlling the risk of contamination by PA-producing weeds, as weed control measures need to be adjusted annually to reflect the natural variations of climate conditions.

ESA endorses the work of the Codex Alimentarius Commission in their Code of Practice and recommends the enhanced management practices at farm and primary processing stages.

EU Commission Regulation (EU) 2020/2040 of 11 December 2020 entered into force on July 1st 2022, amending Regulation (EC) No 1881/2006 as regards maximum levels of pyrrolizidine alkaloids in certain foodstuffs.

	Foodstuffs	Maximum Level [µg/kg]
8.4.8.	Borage leaves (fresh, frozen) placed on the market for the final consumer	750
8.4.9.	Dries herbs with the exception of the dried herbs referred to in 8.4.10.	400
8.4.10.	Borage, lovage, marjoram and oregano (dried) and mixtures exclusively composed of these dried herbs	1000
8.4.11	Cumin seeds (seed spice)	400

The sum of PA includes 21 pyrrolizidine alkaloids and 14 pyrrolizidine alkaloids known to co-elute with them, as listed in the regulation.

Foodstuffs already placed in the market can remain in the market until the end of 2023. A dehydration factor cannot be applied for herbs and spices as the dry product is regulated.

Sampling is critical for obtaining reliable analytical results, since PA-containing weeds occur as spot contamination. A new regulation on sampling for Phytotoxins is currently drafted by the EU COM and is expected to be published in 2023. Until the publication of the new dedicated method, esa recommends the sampling procedure laid down in Regulation (EC) No 401/2006.

A suitable method for the analysis of PA in herbs and spices, is the BfR method for the determination of pyrrolizidine alkaloids (PA) in plant material using SPE-LC-MS/MS (2014).