



Tropane Alkaloids

Otmar Zoller, Silvia Zeltner, Hans Reinhard

Federal Food Safety and Veterinary Office, Risk Assessment Division, Laboratories Sector, CH-3097 Liebefeld

Key words

Tropane alkaloids; Atropine; Scopolamine

Aim of the study (Formatvorlage Überschrift 2)

- (i) Development and validation of a method for the determination of the tropane alkaloids atropine and scopolamine in food.
- (ii) Analysis of foods on the Swiss market, especially those containing buckwheat, sorghum and millet.

Material and methods

A LC-MS/MS method for the detection of the tropane alkaloids atropine and scopolamine in various foods was developed and validated. With this method, it was possible to simultaneously screen also for ergot alkaloids. An international proficiency test was successfully passed. The method was then used for the monitoring of different foods on the Swiss market. 355 samples of processed cereal-based foods for infants and young children, various cereals and products thereof, breakfast cereals, herbal teas and spices were examined.

Results and significance

Tropane alkaloids were detected in 61 samples. Clearly unacceptable levels were found in only two different products for infants and toddlers of the same producer. The highest content was found in a blend of teas containing 79 ng/g tropane alkaloids, virtually only atropine.

Unacceptable levels of ergot alkaloids were not observed. Traces to acceptable levels were detected in 89 samples; levels in all other samples were below the detection limit. No unexpected sources of ergot alkaloids were found. This means that all positive samples also contained cereals, except for one sample that, however, may have been contaminated with cereals during the production process.

As part of a revision of the Ordinance of the Federal Department of Home Affairs on maximum levels for contaminants (SR 817.022.15), the maximum levels for atropine and scopolamine already applicable in the European Union shall be adopted for Switzerland. A maximum level of 1 µg/kg each will apply to processed cereal-based foods and baby foods for infants and young children, containing millet, sorghum, buckwheat or their derived products. Based on the data, it can be concluded that most of the products on the market will comply with these maximum levels. Further measures are not indicated.

Publications, posters and presentations

Compilation of data for internal use.

Project 15TROP

Project duration January 2016 – January 2018