# High probability of responsibility of fenugreek seeds for EHEC O104:H4 outbreak

BfR Opinion No 022/2011 of 30 June 2011

The backward tracing of seed deliveries in Germany and other EU Member States by the German authorities and the EFSA Task Force has shown that certain batches of fenugreek seeds are related to the EHEC outbreaks in Germany and France; this is confirmed by the risk assessment of the European Food Safety Authority (EFSA) and the European Centre for Disease Control (ECDC) of 29 June 2011. According to EFSA, these batches were imported from Egypt.

The Federal Institute for Risk Assessment (BfR) has carried out a preliminary risk assessment on the relevance of these sprouts and sprout seeds in connection with the outbreak event of EHEC O104:H4 in Germany. BfR reaches the conclusion that there is a high probability that fenugreek seeds used for sprout production were the cause underlying the outbreak.

With a view to the protection of the population against infections with the dangerous outbreak pathogen EHEC O104:H4, the Federal Institute for Risk Assessment (BfR), the Federal Office for Consumer Protection and Food Safety (BVL) and the Robert Koch Institute (RKI) recommended on 10 June 2011 to refrain, beyond the usual hygiene measures, by way of precaution from consuming sprouts raw until further notice. One day later BfR extended this recommendation also to home-grown raw sprouts and germ buds.

The federal and Land authorities have intensively worked during the past weeks on the determination of the possible source for the contamination of sprouts with EHEC O104:H4. As a result of the evaluation of 41 outbreak clusters of disease accumulations, available data on delivery lists and distribution pathways of foods it was possible to attribute the associated diseases to sprouts from a horticultural farm in Lower Saxony. Early indications from the competent authorities in Lower Saxony suggesting that seeds for sprout production could have been one of the causes of contamination of the sprouts, have so far not been corroborated by laboratory diagnostics. In more than 700 samples of sprouts and seeds for sprout production EHEC O104:H4 was not detected.

The results of the epidemiological investigations of the German EHEC Task Force nonetheless allow for the conclusion that the outbreak pathogen reached the horticultural farm in Lower Saxony through the seeds used for sprout production. The cases of disease caused by EHEC O104:H4 which recently occurred in France and are not directly related to the horticultural farm in Lower Saxony, support this conclusion.

On 24 June 2011 France reported about an accumulation of EHEC/HUS cases near Bordeaux with an outbreak of the disease between 15 and 21 June 2011. As at 28 June 2011, 15 persons aged between 31 and 64 years contracted EHEC/HUS (EFSA/ECDC Risk Assessment of 29 June 2011). In at least 3 cases EHEC O104:H4 was detected by laboratory diagnostics. According to the analyses carried out so far, there is a high probability that the French and the German outbreak strain are identical.

The persons who became ill in France are supposed to have consumed sprouts which were produced in France from a home-grown seed blend. Only fenugreek sprouts were contained in the sprout blend consumed in France and in the sprout blends of the horticultural farm in

Lower Saxony which could be associated in Germany with EHEC O104:H4 diseases. In a household in Lower Saxony several persons likewise became ill after the consumption of home-grown sprouts from a seed blend which contained, *inter alia,* fenugreek seeds.

Against the background of the international significance of the EHEC outbreaks in Germany and France, EFSA set up a Task Force, with the participation of BfR and BVL, which is to coordinate the further investigations on the clarification of the outbreak on an EU level.

The origin of the seeds for sprout production in France was determined and was notified to the Member States by several alert notification within the European Rapid Alert System for Foods and Feeds (RASFF). The backward tracing of the fenugreek seed batch used in France has shown that a seed batch produced in 2009 was supplied through the same intermediary based in Germany also to the horticultural farm in Lower Saxony. According to the communication by EFSA on 29 June 2011, this batch was imported from Egypt. However, this batch of fenugreek seeds had already been used up when the inspection of the farm was made by the competent authorities and could, therefore, not be sampled. In spring 2011 the horticultural farm in Lower Saxony used both the fenugreek seed batch produced in 2009 and another one produced in 2010 for the sprout production, which was supplied by the same intermediary. According to EFSA the 2010 batch also originated from Egypt. In this batch EHEC O104:H4 has so far not been detected.

Based on the available findings from the risk assessment of EFSA and ECDC it is clear that fenugreek seeds of the mentioned origin which are used as pure grade or in blends for sprout production constitute a risk for human health. This also applies to fenugreek seeds which are dispensed in very small packs to the end consumer and are used in the consumer's households.

Although the available findings allow for a narrowing down of the further investigations, it cannot be excluded at present that also other seed varieties and batches were contaminated by the outbreak strain due to non-hygienic production conditions in the countries of origin. Furthermore, it is possible that the treatment methods of the intermediaries (e.g. cleaning, mixing and filling processes) caused cross-contaminations of other seed varieties and batches.

In order to protect consumers in the best possible manner against an infection by EHEC O104:H4, BfR recommends the following measures:

Recommendations for the competent authorities:

- The competent authorities are advised to completely identify the delivery chain of the fenugreek seed batches which are in the focus of the investigations and to withdraw these batches from the market. As far as intermediaries for these batches are concerned, it should be investigated whether cross-contamination of other seed types and batches by fenugreek seeds can be excluded in these facilities.

- The competent monitoring are advised to inform food companies about the above-mentioned batches of fenugreek seeds which could be contaminated with the outbreak strain EHEC O104:H4 based on the findings from Germany and on the EU level as a result of the backward and forward tracing with the outbreak strain EHEC O104:H4. This information should enable the food companies to possibly take measures of risk minimisation in respect of their own stocks.

- Within the framework of risk-oriented sampling fenugreek seeds should be controlled more intensely.

Recommendations for restaurants and catering institutions:

- BfR recommends food companies in the restaurant and catering business (e.g. hotels, restaurants, canteens) to carefully weigh the dispensing of sprouts for raw consumption to end-consumers against the backdrop of the submitted assessment.

Recommendations for consumers:

- Since the very small packages of fenugreek seeds, including in blends, for home-grown sprout production could be contaminated by the dangerous EHEC pathogen, it is advised against the growing and consumption of the sprouts.

- Consumers are advised to continue to refrain from the consumption of raw sprouts.

- As a matter of principle, BfR recommends to comply with the general rules of kitchen hygiene also when dealing with sprouts.

**Further information:**

BfR website on EHEC: http://www.bfr.bund.de/de/a-z_index/ehec___enterohaemorrhagische_escherichia_coli-5233.html

EFSA/ECDC 2011: Joint Rapid Risk Assessment, Cluster of haemolytic uremic syndrome (HUS) in Bordeaux, France 29 June 2011 (updated from 24 June), http://ecdc.europa.eu/en/publications/Publications/2011June29_RA_JOINT_EFSA_STEC_France.pdf