



International Food Safety Authorities Network (INFOSAN)

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Unusual sources of salmonella

Foodborne outbreaks of salmonellosis are usually associated with the consumption of contaminated animal products such as eggs or poultry meat or with faecally contaminated fresh produce. However, during the last a few years salmonellosis outbreaks linked to unusual food sources have been reported. Many of these products have a long shelf-life (more than 1 year) and are ready-to-eat foods. By highlighting two recent examples we would like to raise awareness among all Food Safety Authorities to potential public health impacts caused by unusual sources of salmonella.

1. Outbreak of *Salmonella* Enteritidis infections linked to consumption of natural raw almonds

A cluster of *Salmonella* Enteritidis (SE) cases marked by a distinctive pulsed-field gel electrophoresis (PFGE) pattern has been identified in the United States and traced to the consumption of natural raw almonds.

To date, 32 cases have been identified with onsets between March 2003 and April 2004. These almonds (from Paramount Farms, California, USA) were sold across the United States under several brands and exported to China (including Province of Taiwan), Democratic Republic of Korea, France, Italy, Japan, Malaysia, Mexico and the United Kingdom.

The United States Food and Drug Administration (US FDA) has notified those countries who received the almonds and several products that contained the implicated almonds have been recalled. For more information, see the US FDA web site: <http://www.fda.gov/>. Several United States health authorities are involved in the ongoing investigations.

Salmonellosis outbreaks linked to almonds are rare and have only been associated with almonds consumed in their raw state without further processing.

The first documented raw almond associated outbreak was documented in Canada in 2001. In that instance, salmonella bacteria matching those of the patients were found in unopened product samples and on farms where the almonds were grown, but the source of the bacteria was not identified. Further information is available on the Health Canada web site <http://www.hc-sc.gc.ca/pphb-dgspsp/publicat/ccdr-rmtc/02vol28/dr2812ea.html>

2. Sesame-based foods — halva and tahini from the Middle Eastern region

In recent years, there have been several large outbreaks of salmonella infection caused by sesame-based foods — halva and tahini imported from middle east countries.

In 2001, there was an international outbreak of *Salmonella* Typhimurium DT104 due to consumption of a particular brand of halva, a sweet made from sesame seeds, honey and flavourings, in Germany, Sweden, Norway and Australia. *Salmonella* Typhimurium DT104 was isolated from samples of the halva the patients had consumed. Further information is available on the Eurosurveillance web site: <http://www.eurosurveillance.org/ew/2004/040603.asp#4>

In 2003, 55 human cases of *Salmonella* Montevideo linked to the imported tahini were reported in Australia which led to several product recalls. More information is available on the Eurosurveillance web site: <http://www.eurosurveillance.org/ew/2003/030918.asp#3>. The UK Food Standard Agency later issued a food hazard warning and recalled imported tahini products based on the positive microbiological test results from products imported into the UK. For more information, see the UK Food Standard Agency web site: <http://www.food.gov.uk/enforcement/alerts/salmonellatahini>.

A study of the survival of *Salmonella* Enteritidis in halva found the bacteria could be recovered 8 months after inoculation. These products are likely contaminated at low levels, however poor handling of the product or long shelf-life without refrigeration could allow for bacterial growth and subsequent human infections.

Recommendations

1. Food Safety Authorities should be alerted that foodborne outbreaks of salmonellosis could be associated with these products.
2. Food Safety Authorities should work closely with and advise public health authorities on the risks associated with these products.
3. Food Safety Authorities should advise the food industry on how to take appropriate actions.
4. Food Safety Authorities should further investigate these problems and share new findings with other food safety agencies globally.

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In view of the need for all countries to promote the exchange of food safety information and to improve collaboration among food safety authorities at national and international level, WHO, with support from the Government of Spain, will shortly launch a new International Food Safety Authorities Network ([INFOSAN](#)). A food safety emergency network (**INFOSAN EMERGENCY**) will be an integral part of INFOSAN. This information has been sent to all the food safety authorities through WHO regional offices. Once the system has been set up, this is the type of information which will be sent through the INFOSAN.