

Invisible threat: Listeria in smoked fish

October 7 2020



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In 2018, 701 cases of severe invasive listeriosis were communicated to the Robert Koch Institute (RKI), which translates into 0.8 cases per 100,000 inhabitants. Most listeriosis illnesses reported are severe and are associated with blood poisoning, meningitis or miscarriages, for example. In 2018, the disease was fatal in 5% of cases. Elderly people,

people with weakened immune defenses, pregnant women and their newborn babies are particularly vulnerable. *Listeria* can be found in a large variety of foods of plant and animal origin. Cold or hot-smoked fish are often contaminated and are, therefore, also suspected of transmitting this illness. Other fish products and seafood eaten raw, such as sushi, sashimi and oysters or cured products such as gravad fish, may also be affected. "Pregnant women, elderly people or those with weakened immune defenses should only eat fish and seafood that have been thoroughly heated," says BfR President Professor Dr. Dr. Andreas Hensel.

Not all *Listeria* bacteria cause illness. Of the 20 *Listeria* species described, only *Listeria* (*L.*) *monocytogenes* is a significant cause of infection in humans. Infections during pregnancy can lead to miscarriage, premature birth, stillbirth or the birth of a sick child. Furthermore, listeriosis mainly develops in people whose immune system is weakened by old age, pre-existing medical conditions or medication intake. They often suffer from [blood poisoning](#), encephalitis or meningitis as well as e.g. from endocarditis or bacterial joint inflammation. Listeriosis is associated with relatively high mortality in risk groups. In healthy individuals who do not belong to one of the risk groups, an infection can lead to inflammation of the gastrointestinal tract plus a fever, with progression generally being mild.

The bacterium *L. monocytogenes* is widespread in the environment and can be found in many foods. High detection rates are found in minced meat, raw meat dishes (e.g. tartare), raw sausage meat (e.g. "Mettwurst" raw minced pork) and raw milk, for example. However, numerous other ready-to-eat foods of animal and plant origin, which are not subjected to further germicidal treatment (e.g. heating) after processing, may also contain *L. monocytogenes*. Examples include cheese (made from raw or pasteurized milk), pre-cut salads and vegetables, deli salads or sliced sausage products. This is because listeria can survive for a long time in food processing plants in recesses that are difficult to reach for cleaning

and disinfection. As a result, the continuous entry of the germs during food production is possible.

Raw, smoked or cured [fish products](#) and seafood such as sushi, sashimi, oysters, cold or hot smoked fish (e.g. smoked salmon) and cured fish (e.g. gravad salmon) are frequently contaminated with listeria. 7 to 18 % of the samples of cold-smoked or cured fish products examined by the food monitoring authorities in Germany between 2007 and 2017, and 3 to 9 % of the samples of hot-smoked fish products contained *L. monocytogenes*. Even low germ concentrations are hazardous to risk groups, for example when products are stored at home above the temperatures recommended by the manufacturer or when they are eaten after their best-before date. What's more, handling contaminated products risks transferring listeria to other foods.

The German Nutrition Society (DGE) recommends at least one fish meal every week. Fish notably contains special fatty acids and the long-chain omega-3 fatty acids docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA).

The BfR recommends that people who have an increased risk of developing listeriosis should not generally avoid fish, but rather only eat fish or seafood that has been thoroughly heated. Listeria can be reliably killed off by heating [food](#) to a core temperature of 70 °C for at least two minutes. Risk groups should refrain from eating raw, smoked and cured fish products and seafood.

Provided by BfR Federal Institute for Risk Assessment

Citation: Invisible threat: Listeria in smoked fish (2020, October 7) retrieved 14 May 2024 from <https://medicalxpress.com/news/2020-10-invisible-threat-listeria-fish.html>

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