

# Raw food



Many people consider unprocessed foods to be healthy. However, the consumption of raw animal-based foods, and even fruit and vegetables, can lead to infections.

Refreshing melon pieces and pre-packaged salads, carpaccio as something savoury and bread on a stick by the campfire – what sounds like a carefree summer picnic with lots of delicious food can come to an unpleasant end. The cause: pathogens that are normally killed when food is heated. If animal-based foods such as meat, fish, eggs or milk are eaten (almost) raw, not cooled sufficiently or if pathogens are transferred to other ready-to-eat foods during preparation, foodborne infections can occur. Fruit and vegetables can also be contaminated with pathogens.

### INVISIBLE THREAT

Even though raw foods are a regular part of many people's diets, the health risks are often underestimated. This is shown by a representative survey carried out by the BfR. In particular, there is a perception of a (very) low health risk associated with popular foods such as raw sausage, raw ham, unpasteurised soft cheese, cold-smoked fish and frozen berries. Since pathogens do not usually lead to food spoilage, they cannot be seen, smelled or tasted.

Around 100,000 illnesses are reported in Germany each year that may have been caused by bacteria, viruses or parasites in food. The number of unreported cases is probably much higher. Foodborne infections are usually associated with stomach cramps, diarrhoea and vomiting. Most of the time they are self-limiting. However, in extreme cases, they can be life-threatening for small children, people with previous illnesses, the elderly and unborn children. An entire department

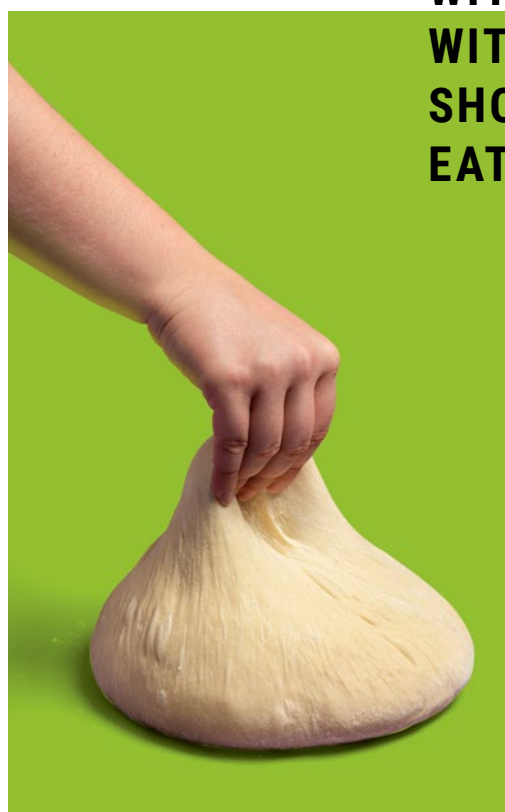
at the German Federal Institute for Risk Assessment therefore deals with the detection, health assessment and ways to combat microbial risks in food.

*Salmonella*, *listeria*, norovirus, to name but a few, can be present in many foods. While the majority of the population is familiar with these pathogens, there is a lack of knowledge about other foodborne pathogens. Particularly surprising: campylobacteriosis has been the most frequently reported bacterial foodborne disease in Germany and Europe for years, and yet only just under a quarter of people have heard of the pathogen that causes it – *Campylobacter*. The same applies to EHEC, particularly dangerous *Escherichia coli* bacteria (also known as STEC or VTEC).

### SNACKING WITHOUT REGRETS?

If perishable food is stored without refrigeration, existing pathogens can multiply very quickly and endanger health if the food is not heated sufficiently before consumption. In the case of bread on a stick, which is popular in summer, both sources of trouble can come together. If dough, made with egg, is not refrigerated and remains raw on the inside when cooked over the fire, even when it is browned on the outside, *salmonella* infections can occur. Furthermore, children like to lick raw dough off their fingers.

**DOUGH,  
WITH OR  
WITHOUT EGGS,  
SHOULD NOT BE  
EATEN RAW.**



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## FROZEN BERRIES CAN BE CONTAMINATED WITH VIRUSES THAT LEAD TO GASTROINTESTINAL ILLNESSES AND LIVER INFLAMMATION.



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“Although it can be tempting: when preparing dough, with or without eggs, you should not taste the raw mixture. The reason for this are possible STEC bacteria in the flour,” explains Dr Matthias Fischer, veterinary microbiologist at the BfR.

Caution is also advised when choosing a topping for your bread roll at the dining table. Ready-to-eat foods that are not heated during production can also contain pathogens. These include raw meat and meat products, such as minced meat and Teewurst, as well as soft cheese derived from unpasteurised milk and cold-smoked fish, such as smoked salmon. People from the at-risk groups mentioned should therefore only eat animal-based foods if they have been sufficiently heated before consumption.

### WHY FRUIT AND VEGETABLES ARE NOT ALWAYS HEALTHY

Fruit and vegetables usually contain many valuable ingredients. However, it is possible that they become contaminated with pathogens during cultivation and on their way from field to plate. Examples include frozen berries, melons and ingredients for raw vegetable salads. Frozen berries can be contaminated with viruses, among other things, that can lead to gastrointestinal diseases and liver inflammation. Fans of the sweet fruits should therefore heat them up before consumption, preferably to at least 90 °C.

## BfR survey: Raw foods



Online survey of 1,004 people in Germany, survey period 1 to 11 September 2022.

**73 %** eat raw sausage or raw ham at least 1 to 3 times a month, followed by unpasteurized soft cheese (57 %), raw meat (38 %), cold-smoked fish and frozen berries (both 33 %).

**23 %** are familiar with *Campylobacter*, the causative agent of the most frequently reported bacterial foodborne infection in Germany and Europe.

**4 von 5** respondents (79 %) associate frozen berries with a (very) low health risk. In their raw state, fish and seafood (73 %), meat and eggs (both 72 %) are considered (very) risky.

With melons, pathogens adhering to the skin can get onto the pulp during preparation. “*Salmonella*, *listeria* and EHEC can easily multiply on the low-acid pulp, when the outside temperature is warm,” explains Dr Heidi Wichmann-Schauer, an expert for food safety at the BfR. Therefore, cut melon should be eaten quickly or refrigerated until consumption.

Pathogenic *listeria* can get onto vegetables and lettuce during cultivation and processing. “The moist and nutrient-rich environment in packs of pre-cut mixed lettuce provides favourable conditions for the multiplication of pathogens,” says Wichmann-Schauer. The risk of infection can be reduced, especially for risk groups, by preparing raw salads from thoroughly washed and not chopped ingredients just before consumption. —

#### More information



BfR FAQ  
“Protection against foodborne infections in private households” (pdf)



BfR Consumer Monitor Special  
“Raw food” (pdf)

**People from risk groups should heat animal-based foods sufficiently before consumption.**



BFR260

**Boil raw milk before consumption.**



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## TIPS

### Avoiding foodborne infections

Wash your hands thoroughly with soap and dry them before preparing food. This recommendation also applies between individual work steps if your hands come into contact with raw food.

Observe kitchen hygiene rules so that pathogens from raw food are not transferred to other food. To protect against cross contamination, only thoroughly cleaned kitchen utensils, such as chopping boards and cutlery, should be used for food that is not reheated before consumption.

Maintain the cold chain and store perishable food in the refrigerator at 2 °C to a maximum of 7 °C. If perishable food is offered over a longer period of time at barbecues, picnics or garden parties, it must also be sufficiently cooled.

Heat raw animal-based food before consumption so that all parts of the product reach at least 70 °C for 2 minutes. Warm dishes should be kept sufficiently hot (at least 60 °C in all parts of the food) or cooled to below 7 °C within a few hours for longer storage. Larger amounts of food can be divided into several flat containers for this purpose.

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