

Listeria control in ready-to-eat products

Again and again there are product recalls because of Listeria monocytogenes.

A Listeria specialty is their tolerance to cool temperatures. Chilled ready-to-eat meat products like fish products, cheese, salads, vegetables, etc. are in focus. In practice, the fight against Listeria is a challenge.

Again, and again there are product recalls and public warnings about Listeria monocytogenes.

According to the Swiss Federal Food Safety and Veterinary Office BLV website, mainly chilled meat products (roasted turkey, ham cubes), cheese (raw milk cheese, Camembert, Gorgonzola) and frozen vegetables (creamed spinach, vegetable mix) were affected in recent three years.

Listeria monocytogenes causes listeriosis. Healthy people (with an intact immune system) may experience symptoms such as nausea, vomiting or diarrhoea. Pregnant women may have a miscarriage. Immuno-compromised patients or elderly people could die.

In Switzerland and Europe, the number of listeriosis cases is on the increase. That certainly has something to do with the fact that listeriosis cases must now be reported. Because the transmission of Listeria first of all occurs through food, the pressure on food manufacturers increases. Further pressure comes from the European Food Safety Authority EFSA. This authority is considering whether for the ready-to-eat products such as charcuterie the standard of 100 germs Listeria monocytogenes per gram should be reduced to zero at the end of shelf life. This would make Europe equal to the zero tolerance of the US FDA. In 2017, EFSA began to examine Listeria samples of finished products extensively across Europe. As a result, various food manufacturers came into the focus of the authority which resulted in some factory closures.

Listeria monocytogenes are everywhere. As with all bacteria, they multiply when water, food and suitable growth temperatures are present. Like other vegetative germs they get killed with heat and acids. The special feature of Listeria is its tolerance to cool temperatures. Although they will grow slowly, they will already multiply at a temperature of 4° C. This is especially a problem for mild-acid products with a pH-value of 5 and upwards, which are cooled and ready-to-eat, e.g. meat and sausage products, fish products, cheese, salads, vegetables etc.

In theory, the fight against Listeria in the food processing industry is simple. The bacteria must not be found in contact with open products in the environment, on the lines / equipment and on the products. It is therefore worthwhile setting up a High-Hygiene-Zone. If such a zone exists, the target is to eradicate Listeria nests and to stop any further entry into the High-Hygiene-Zone. In practice, the fight against Listeria is not so easy and often takes several months. Cherished habits need to be changed and equipment repaired or replaced. In the following part of this article, the experience gained in three different European factories fighting successfully against Listeria will be shared.

Heat treatment: In the mentioned recalls (roast turkey, ham cubes) at the beginning of the article the product was cooked before entering the High-Hygiene-Zone. The important thing here is that the right temperature at the coolest spot of the product is attained and that the holding time in order to kill the bacteria is complied with.

Transfer of the cooked products to the high-hygiene zone: The germ-free product must be transferred to the High-Hygiene-Zone without contamination. There are different solutions for this: The product can be cooled down in a heat tunnel and transported directly to the High-Hygiene-Zone without further transport. Or the hot product can be cooled in a clean intermediate zone and then

transferred directly to the High-Hygiene-Zone. Alternatively, the product is protected with a close-fitting auxiliary foil which is heat-treated with the product and removed afterwards in a clean intermediate zone before the product is transferred without protection to the High-Hygiene-Zone.

High-Hygiene-Zone: For zoning it is important to have structural measures (separation, ventilation) as well as clear rules for the employees.

It is important that a zoning is permanent: If the cleaning crew does not keep zoning at night or if the mechanics do not disinfect their tools, this can lead to cross-contamination. (See article about zoning in foodaktuell 4/2018.)

Cleaning and disinfection: Of course, the cleaning and disinfection of the High-Hygiene-Zone plays a major role. It is not only important how clean it is, but also which disinfectants are used. Peracetic acid and hydrogen peroxide have proven best in Listeria control. Very important is a short drying time after cleaning and disinfecting, so that bacteria have no opportunity to reproduce.

Hygiene Design: The best cleaning and disinfection is no use if the listeria itself can nest in cracks and crevices and thus protect themselves against cleaning and disinfection. Wherever water remains and is not dried off, the Listeria will multiply. (See article about hygiene design in foodaktuell 21/2017.)

Microbiological analysis: The state of the processing plant regarding Listeria can only be tested with microbiological analyses. This requires regular examination of finished products as well as line samples (for example, products before packaging), raw material and environmental samples. Good planning can save a lot of money here.

If a manufacturer has problems with Listeria, it is necessary to involve experts. An external review and external expertise help solve these problems faster, save costs or avoid the closure of the business.

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