



milarex

N E W S

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Food safety

We believe that food safety culture is a choice you make!

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Producers of smoked and gravled salmon need to become more aware of their food safety responsibilities with regard to listeria and intensify their efforts to minimize the entry, spread and persistence of the pathogen in the production environment and thus the contamination of products.”

According to: “Invasive listeriosis outbreaks and salmon products: a genomic, epidemiological study” (EMERGING MICROBES & INFECTIONS 2022, VOL. 11, NO., Taylor&Francis online) published April/May 2022



Listeria risk in salmon products

Pathogens are all around us in our daily lives. Seafood as well as other fresh food products are exposed to listeria and other pathogens, and salmonids are susceptible to infection. The scientific article: "Invasive listeriosis outbreaks and salmon products: a genomic, epidemiological study" from April/May 2022 have analyzed 22 listeriosis outbreaks in Germany between 2010 and 2021 that were likely associated with eating smoked and graved salmon products.

Highlights of the German study:

- Researchers state that uncooked salmon products are high risk foods frequently contaminated with *Listeria monocytogenes* and were a significant and preventable public health problem.
- Researchers identified 22 listeriosis outbreaks between 2010 and 2021 that were likely associated with eating smoked and graved salmon products. Many of them also affected people in other countries.
- Within each of the 22 outbreaks, a close genetic relationship was found between the patient *Listeria monocytogenes* isolates and isolates from salmon products or associated processing equipment.
- In Germany, 228 patients were identified. Of 50 deaths reported, 17 were confirmed to have died from listeriosis. The number of people sick in the outbreaks ranged from two to 37 with a median of 8.
- Results from patient interviews provided convincing epidemiological evidence and support the causal relationship between listeriosis outbreaks and the consumption of salmon.
- Smoked and graved salmon products contaminated with *Listeria monocytogenes* pose a serious risk for listeriosis infection in Germany.

Source: Invasive listeriosis outbreaks and salmon products: a genomic, epidemiological study (EMERGING MICROBES & INFECTIONS 2022, VOL. 11, NO., Taylor&Francis online) published April/May 2022



Consumers expect the food they eat to be safe. We are all consumers, and we care about the well-being of our loved ones. Food-borne bacteria can cause severe consequences and this understanding needs to be the backbone of any food producing company's culture and it's fundamental to how Milarex operate its business.

Our approach

Every day our skilled teams are assessing risks and looking for ways to improve. The more we increase testing and the smarter we test, our understanding about connections between listeria risks and effective fighting listeria sources.

Food safety has become a culture and part of our DNA, built on our passionate and committed leaders that motivates and guide their teams.

More than 165 000 tests are analyzed in our laboratory yearly to exceed the expectations on taste, quality and food safety required from international retail customers and consumers. We believe in openness about testing and results.

Our food safety methods are all based on the HACCP principles. We have set up a system for monitoring, testing, and introducing corrective actions. All raw materials are tested on arrival, all batches produced are tested at different steps of the production and as finished consumer products. We sample and test the production facilities daily.



Our 2021 results

Listeria results for incoming raw materials

All batches of raw material delivered to our production facility are tested for different pathogens. Listeria is the main pathogen to screen for in salmon. Our expectation is zero listeria on incoming deliveries regardless of specie, country of origin or packing station. As the results show, our expectations are not met, and a stringent testing is required to reduce risks.

Listeria monocytogenes - Raw materials				
Species	Origin	2019	2020	2021
		% positive	% positive	% positive
Salmon	Norway	4.0%	2.2%	4.7%
	Organic	4.8%	1.0%	2.3%
	Scotland	14.3%	4.3%	0.0%
	Iceland	5.0%	1.3%	0.5%
	Denmark	-	50.0%	-
	Chile	-	0.0%	10.0%
	TOTAL		4.1	2.1%
Trout	Norway	12.0%	4.2%	3.0%
	Denmark	4.1%	17.6%	5.6%
	Poland	0.0%	0.0%	0.0%
	Scotland	0.0%	-	0.0%
	Iceland	-	0.0%	-
	TOTAL		9.1%	7.0%
Sockeye		6.0%	5.2%	6.9%
All Species		5.0%	2.9%	4.3%

From 2020 to 2021 there has been an increase in the number of positive listeria tests on our incoming raw materials. We are disappointed to see last year's positive development being wiped out.

The increased listeria findings are caused by a negative trend in the supply of Atlantic salmon out of Norway and in sockeye. On the other hand, we are pleased to see that the numbers on trout are significantly reduced.

All findings of listeria are addressed with the supplier in accordance with Milarex food safety specifications and an established set of delivery rules.

In Milarex we take pride in maintaining low levels of listeria throughout our operations. We see this as a strong indicator of operational excellence, as we believe is also the case with farming companies.

Listeria results for environmental monitoring

From time to time, we detect listeria in the production environment. Listeria in the processing area is not unnormal and extensive experience has helped us identifying high risk areas and equipment. The Milarex factory has been specially designed and equipped to reduce the risks of spreading pathogens like listeria.

Listeria results for environment monitoring (according to monthly schedules)	2019	2020	2021
	% positive	% positive	% positive
Low risk area - BEFORE PRODUCTION	0.2%	0.6%	0.0%
Low risk area - DURING PRODUCTION	1.6%	4.2%	1.3%
Low care / brown meat removing / high risk area BEFORE PRODUCTION	0.0%	0.3%	0.0%
Low care / brown meat removing / high risk area DURING PRODUCTION	0.4%	1.5%	1.4%
Sum / TOTAL	0.5%	1.3%	1.0%

We measure the success of our proactive approach by keeping the number of positive tests on a very low level. All testing is in accordance with HACCP procedures and ISO standards.

Our 2021 environmental screening results show a reduction in positive test results. The main driver in the reduction comes from a distinct reduction in positive tests from low risk areas in the production area. This is typically more isolated environments throughout our production facility. The readings from the high risk areas are stable on a low level.

Despite the current low levels of positive test results, we always strive to improve. Food safety are by many seen as a part of compliance; in Milarex we think differently! Consumers should never be unsure about the food they eat. We are all consumers, and we care about our loved ones wellbeing.



Listeria results for finished products

Producing and supplying ready-to-eat (RTE) products to the global retail markets comes with a large responsibility.

RTE products are often consumed out of pack, on the go and without any further preparation. Due to the risk of listeria contamination and its ability to grow at refrigerated temperatures and without any access to oxygen, robust testing regimes during production must be in place.

In Milarex we take pride in optimizing hygiene procedures, continuous improvement of our testing regime and other preventive measures. All-important efforts in our zero-listeria mindset.

Our own modern in-house laboratory tests all batches running through our production lines to secure quick results and a rapid response time. In case of a positive listeria test in

a finished product, the product will immediately be blocked, corrective measures put in place, and the product will be re-tested to rule out any false positive cases.

With our „Hold & Release rules“ no product will be released into the market unless it is deemed safe after testing.

The 2021 test results for finished RTE products shows great improvement from last year's numbers. As a food safety conscious organization, we are proud of our strong team effort in reaching only 0,2% positive listeria tests out of a large and fast-growing production volume.

Listeria results for finished product at the beginning of shelf life test RTE	YEAR	% positive
Sum Atlantic, Sockeye, Trout	2019	n/a
	2020	0.7%
	2021	0.2%

*For us, food safety is all about behavior.
We believe that food safety culture is a choice you make!*