

Listeria monocytogenes in ice-cream

The ice-cream

Ice-cream is defined as a frozen food product containing a minimum of 5% fat and 2.5% milk protein, which is obtained by heat-treating and subsequently freezing an emulsion of fat, milk solids and sugar (or sweetener), with or without other substances. “



Ready-to-eat food means food intended by the producer or the manufacturer for direct human consumption without the need for cooking or other processing effective to eliminate or reduce to an acceptable level micro-organisms of concern.

Food category	Microorganism, toxin and metabolites	Sampling plan		Limits		Analytical reference method	Stage where the criterion applies
		n	c	m	M		
Ready-to-eat foods unable to support the growth of <i>L. monocytogenes</i> , other than those intended for infants and for special medical purposes	<i>Listeria monocytogenes</i>	5	0	100cfu/g		EN/ISO 11290-2	Products placed on the market during their shelf-life.

Listeria monocytogenes

Listeria monocytogenes is a gram-positive rod. It is ubiquitous in the environment and it causes listeriosis in humans and animals. It is a facultative anaerobic bacterium. It's a psychrotrophic bacterium and can grow from 1 to 45°C, but their optimal growth temperatures range from 30 to 37°C. Some of the growth and survival limits for *L. monocytogenes* are in the following:

Growth and survival limit for <i>L.monocytogenes</i>				
Parameter	Minimum	Maximum	Optimal	Can survive (but not growth)
Temperature (°C)	-1,5 to 3	45	30 to 37	-18
pH	4,2 to 4,3	9,4 to 9,5	7,0	3,3 to 4,2
Water activity	0.90 to 0.93	>0,99	0,97	<0,90
Salt (%)	<0,5	12 to 16	0,7	≥20

Sources of microbial contamination

- Human carriers.
- Insufficient refrigeration.
- Incorrect pasteurization.
- Addition of ingredients directly to the frozen mix.
- Contamination after the product has been processed.

Survival of *L. monocytogenes* in ice-cream

While *L. monocytogenes* does not growth at -18°C, it can survive for long periods in frozen products such as ice-creams.

Conclusions: Although different studies reveal the presence of *Listeria monocytogenes* in ice-creams, there is not a straight relation with the cases of listeriosi yet. As *L.monocytogenes* is not able to reproduce while freezing, the number of cells that the microorganism contains is not sufficient to cause the disease.