THE OCCURRENCE OF LISTERIA SPP. IN MEAT PRODUCTS IN CZECH REPUBLIC

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Background

Listeria monocytogenes is well-recognized as a foodborne pathogen. In the past decade the potential for epidemic food-borne listeriosis as well as sporadic food-borne cases has become apparent.

Large epidemics were in connection with eating contaminated paté in U.K. or jelly tongue in France. There are every year about 10 sporadic cases in Czech republic. Considering that most of the cases of listeriosis is connected with eating food it is necessary to know the situation in the occurrence Listeria spp. in food. At present the situation in occurrence of Listeria spp. in food is not monitored in Czech republic.

Objectives:

The aim of our work was to survey the occurrence of Listeria sp. and Listeria monocytogenes in some food of animal origin (meat products, cheeses).

Methods

We have investigated about 300 cheeses and meat products to survey presence Listeria sp. The samples were bought at retail store in varius area Czech republic between Februar to December 1995. The composition of products were as folow:
meat products: raw fermented sausage, mettwurst (raw), ripened salami, salami - sliced vacuum packed, paté.
cheeses: soft smear-ripened, soft mould-ripened, Eidam, goat's and sheep's milk cheeses.
Listeria sp. isolation procedure

Products (25g) were diluted 10-fold in UVM I (OXOID) and then blended 1 min. with a Stomacher. All samples in UVM I were incubated at 30 C. After 24 h of incubation, each samples was streaked on to PALCAM and OXFORD agar (OXOID), and 0,1 ml subcultured into 10 ml UVM II (OXOID). The samples were incubated 24 h at 30 C. After incubation UVM II broth was streaked on PALCAM and OXFORD agar. The plates were incubated 48 h at 35 C. Typical Listeria colonies were identified by testing for catalase, oxidase, motility, CAMP test and API-test (BIO-MERIEUX).

Results and discussion

More than 300 hundred samples were collected from retail stores. Table I presents the results obtained for Listeria spp. in meat products and table II presents the results from cheeses. Listeria spp. were detected in 60 (30 %) samples of meat products and in 38 (28 %) samples of cheeses. There were found Listeria monocytogenes with 13 (7 %) of the total samples of meat products and 4 (3 %) of the total samples of cheeses.

The highest amounts were in fermented sausage. The most frequent occurrence was in mettwurst salami imported from France. We found a majority of Listeria innocua in this type of products as well as Listeria monocytogenes.

We found Listeria monocytogenes and Listeria innocua at other types of raw salami as well and very often both together. We found Listeria innocua (5 cases) and Listeria monocytogenes (1 case) in ripened salami (cooked) while cooked salami (sliced vacuum packed) contained Listeria monocytogenes in 3 cases. We found in 88 samples of various kinds of paté 3 samples which constain Listeria innocua and 2 samples with Listeria monocytogenes. We found the occurrence of Listeria innocua in 2 delicatessen products as well but no Listeria monocytogenes.

Table I

Frequency of Listeria spp. in meat products

Product	No. samples	No. (and %) Listeria spp.	No.(and %) L. innocua	No. (and %) L. monocyt.
Meetwust salami	47	29 (62)	27 (57)	2 (4)
Raw salami	25	12 (48)	7 (28)	5 (20)
Paté	88	5 (6)	3 (3)	2 (2)
Cooked Salami	19	3 (16)	0	3 (16)
Ripened salami - cooked	19	5 (26)	4 (21)	1 (5)
Delicatessen	6	2	2	0
TOTAL	**200**	**60 (30)**	**47 (24)**	**13 (7)**

In cheeses the highest number of findings Listeria spp. were in a special sort of soft smear-ripened cheese. This type of soft ripened cheese is already producing by traditonal technologie for century. We proved from 54 investigated samples Listeria innocua in 30 cases (61 %) and Listeria monocytogenes in 3 cases (5 %). Listeria monocytogenes was found in cheeses from goat´s and sheep´s milk as well. Listeria innocua was found in soft smear-ripened cheeses and Eidam cheeses. In other ripened chesses and hard cheeses no Listeria spp. was found.

Table II.

Frequency of Listeria spp. in cheeses

Product	No. samples	No. (and %) Listeria spp.	No.(and %) L. innocua	No. (and %) L. monocyt.
Soft smear-ripened cheese	54	33 (61)	30 (55)	3 (5)
Eidam	10	4	4	0
Goat´s, sheep´s cheeses	17	3 (18)	2 (12)	1 (6)
Mould cheeses	23	2 (9)	2 (9)	0
Soft ripened cheeses	14	0	0	0
Other cheeses	16	0	0	0
TOTAL	**134**	**42 (31)**	**38 (28)**	**4 (3%)**

Conclusions

The results of our investigation agree with results publication in foreign literature. Very important is the very frequent occurrence of Listeria sp. in meetwurst, which belongs to the raw salami group. In our investigation we found out that 60 % of these products contain Listeria sp. Similar results published for example (FERRON, P. 1993, ROCOURT,J. et al.,1992, Mc LAUCHLIN, 1995).

Relatively frequent findings of Listeria monocytogenes are in other fermented raw salami which are produced without starter culture. Other types of meat products are heat treated. The presence of Listeria spp. is probably connected with breaking of the technological procedure or secondary contamination.

The findings of Listeria sp. were mainly in products with longer shelf life (meetwurst 5 weeks, sliced vacuum packed products 2-3 weeks. There is a possibility of increase of Listeria spp. in higher number despite storing at refrigerated temperature.

We can say that at meat products at retail store in the Czech republic (imported and produced in the Czech republic). Listeria monocytogenes can be found above all in raw salami (10 %), paté (2 %), ripened salami - cooked (5 %) and soft smear-ripened cheeses (5 %).

Pertinent literature

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