Rev. Biol. Trop., 42 (1/2): 327-328, 1994

COMUNICACIONES

Incidence of *Listeria monocytogenes* in pasteurized ice cream and soft cheese in Costa Rica, 1992

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(Rec. 13-VII-1993. Acep. 14-X-1993)

Resumen: Durante el segundo semestre de 1992, se estudió la presencia de *Listeria monocytogenes* y *Escherichia coli* en 50 muestras de helado pasteurizado y 20 de queso suave. Las muestras fueron adquiridas en diez heladerías y 20 supermercados de San José, Costa Rica, seleccionados aleatoriamente. El procesamiento de las muestras y la identificación bacteriológica se realizaron siguiendo la metodología recomendada por la International Dairy Federation (IDF). Se halló *L. monocytogenes* en el 2% y 45% de muestras de helado y queso, respectivamente. *E. coli* se evidenció en todas las muestras de queso en niveles superiores a 1100/g, evidenciando una alta contaminación con materia fecal.

Key words: Ice cream, soft cheese, *Listeria monocytogenes*, *Escherichia coli*, *contamination*.

L. monocytogenes has been recognized as a human pathogen since 1926; but intensive research began later reflecting outbreaks of human listeriosis in North America and Europe in the early 80's (Farber & Petterkin 1991).

This agent is found naturally in dust, soil, rotten vegetables, plants, rivers and also in the intestine of humans and other animals. The infection can be acquired by the ingestion of contaminated food as dairy products, especially soft cheese, which has been associated with outbreaks.

This study reports the presence of *L. monocytogenes* and *E. coli* in 50 samples of pasteurized ice cream and 20 of soft cheese. Samples were randomly acquired in 10 ice cream shops and 20 supermarkets in San José, Costa Rica. They were processed according to International Dairy Federation (IDF) methodology (Anonymous 1989). *L. monocytogenes* was identified on the basis of Gram stain, motility, catalase reaction, Voges Proskauer, CAMP test, ß hemolysis and acid production from rhamnose but not from xylose or manitol.

Our results indicate that *L. monocytogenes* was present in 2% of the ice cream and 45% of the soft cheese samples. The low incidence of this bacteria in pasteurized ice cream agrees with other reports. Such was not the case with the incidence of the bacteria in soft cheese, since most researchers report levels lower than 10% (Farber & Petterkin 1991).

Around 30% of the milk produced in Costa Rica is used in the elaboration of cheese without pasteurization. This represents a serious problem, since it has been demonstrated that the incidence of *L. monocytogenes* in raw milk can be as high as 45% in countries such as Spain (Farber & Petterkin 1991). A solution to this problem is the use of pasteurized milk or to pasteurize the end product, since the heat treatment destroys the bacteria (Anonymous 1988).

Although the sampled cheese was sold as pasteurized, milk can not be discarded as res-

ponsible for the contamination, since there is no strict and permanent control over the thermal treatment that the soft cheese sold as "pasteurized" in Costa Rica receives.

The manipulation of the end product is another factor that affects its quality, since 100% of the cheese samples presented a concentration of *E. coli* greater that 1100/g. The source of *L. monocytogenes* could be feces from cattle or humans, since 10% of the general population are carriers of this agent (Farber & Petterkin 1991, Anonymous 1988, Gellin & Broome 1989).

We did not quantify the levels of *L. monocytogenes*, but the results obtained allow us to call the attention about the risk that soft cheese represents in the transmission of this microorganism, since the intrinsic factors make it a good media for the reproduction of the bacteria up to the infecting numbers (Marth 1988, Leistner 1990).

The use of lactic bacteria is recommended to improve the microbiological quality of cheese without altering its organoleptic characteristics, since several reports show the inhibitory effect on the growth of some pathogens, including *L. monocytogenes* in dairy products (Speck 1972, Valdes-Stauber *et al.* 1990).

Further research should analyze bacteria in raw milk and during soft cheese manufacture.

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