Title: Detection of Listeria monocytogenes in Unpasteurized Liquid Egg Commercially Broken in Japan

Authors: Miho Ohkochi, Miyuki Nakazawa, Nobuhiro Sashihara

Abstract:

Introduction: Listeria monocytogenes is an environmentally ubiquitous food-borne pathogen. It is also well known that the bacterium highly contaminates livestock products such as chicken meat. However, there have been few reports about its contamination on eggs or egg products.

Purpose: The purpose of this study was to investigate L. monocytogenes contamination in unpasteurized liquid whole egg commercially broken in Japan, and to confirm the legal pasteurization condition of liquid egg for Salmonella in Japan can be used as that for L. monocytogenes.

Methods: In 1993, 1994 and 2005, unpasteurized liquid whole egg samples were collected from 13 commercial establishments across Japan. The samples were tested for the presence of Listeria species and L. monocytogenes by selective enrichment procedures, and the number of L. monocytogenes was estimated using the most probable number (MPN) procedure.

Results: Overall, 238 out of 803 samples (30%) were contaminated with Listeria spp. The Listeria spp. contamination levels varied among the establishments (ranging from 8 to 55% of the samples from each establishment were contaminated) but did not show differences between 1993/1994 and 2005 (28% and 33%, respectively). L. monocytogenes were isolated from 4/803 samples (0.5%), which is considerably lower than known detection rates of other livestock products (5.1~42%). The numbers of L. monocytogenes bacteria were further tested for the two contaminated samples collected in 2005, and the contamination levels were both below 7.5 organisms per 25g.

Significance: This low level contamination leads us to recognize the legal egg pasteurization condition for Salmonella in Japan would be also sufficient to ensure microbial safety against L. monocytogenes, even taking into consideration its higher heat tolerance.