# Effect of Sodium Chloride on Pathogenic Bacteria and Its Genetical Analysis

Sou-ichi Makino[1], Yumiko Okada[2], Kikuji Itho[3], and Koichi Takeshi[4]

[1]Obihiro University of Agriculture and Veterinary Medicine, Department of Veterinary Medicine,

[2]The National Institute of Public Health, Department of Veterinary Public Health,

[3]Tokyo University, Department of Veterinary Medical Sciences,

[4]Hokkaido Institute of Public Health, Food Hygiene Division

## Summary

The effects of sodium chloride on the morphology, growth and virulence of *Listeria monocytogenes* were examined. The growth of *L. monocytogenes* EGD was inhibited by adding NaCl, and chain formation of bacterial cells was observed. But *L. monocytogenes* was able to multiply in HeLa cells normally regardless of the concentration of NaCl. When *L. monocytogenes* was injected into mice and recovered from the spleen and liver, no difference was shown by intragastorically injection. These results showed that NaCl inhibits the bacterial cell growth but has almost no influence on the pathogenicity. Finally, we thought that the growth of *L. monocytogenes* could be protected in foods containing a high concentration of NaCl but that the hazard to humans by *Listeria* might be preserved.

In the period from May to June 1998, the outbreak of enterohaemorrhagic *Escherichia coli* (EHEC) O157:H7 infection occurred in Kanagawa, Toyama, Tokyo and other places. We isolated *E. coli* O157 from salmon roe and patients. Analysis of the isolates by a pulsed-field gel electrophoresis (PFGE), plasmid profiles, and antibiotic patterns, revealed that all isolates derived from same origin. We studied *E. coli* O157 in the saline solution (13%), resulting that 3 food origin isolates were resistant to NaCl, but that 2 patient origin isolates were sensitive. And the examination into whether the living cell numbers changed according to the difference of plates showed that the detected cell numbers were different. It was extremely small, especially on DHL agar and on MaConkey agar. In addition, under the fluorescence microscopy, bacterial cells, which were possibly alive, were observed. These results indicated the possibility that *E. coli* O157 entered into VNC (Viable but Non-Culturable) state. In conclusion, it is important to establish the way to detect the pathogen certainly and to take the surest plan for preventing contamination.