

## Generation of probiotic lactic acid bacteria resisting sodium chloride and their application to food fermentation

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### Summary

Probiotics are defined as cultures of live microorganisms that, applied to animals or humans, benefit the host by improving properties of indigenous microflora. *Lactobacillus acidophilus* group lactic acid bacteria and *Bifidobacterium* have been widely utilized as probiotics. Although these bacteria have been applied to various dairy products industrially, they have not been applied to meat products. Since these bacteria are relatively sensitive to sodium chloride and sodium nitrite. In many countries, most meat products must contain these compounds for preservation during storage. For example, regulations for the maintenance of meat products safety in Japan require the use of 3.3% sodium chloride and 200 ppm sodium nitrite. Therefore, effective starter cultures for fermented meat products are claimed to resist these compounds. In this study, we carried out the generation of mutant strains of *Lactobacillus gasseri* and *Bifidobacterium bifidum* resisting sodium chloride and sodium nitrite by UV irradiation. Such strains could be utilized for producing new probiotic meat products, and these products may develop new markets in the meat industry.

UV irradiation to the strains of *Lactobacillus gasseri* KU3101 and *Bifidobacterium bifidum* KU4002 generated several mutants resisting sodium chloride and sodium nitrite. A mutant strain 3101-M08 generated from *Lactobacillus gasseri* KU3101 and a mutant strain 4002-M22 from *Bifidobacterium bifidum* KU4002 demonstrated satisfactory growth in meat containing 3.3% sodium chloride and 200 ppm sodium nitrite. Although proteins extracted from the cell surface of both mutant strains were slightly different from those of the original strains, other biochemical characteristics of both strains were indistinguishable from those of original strains. These results suggest *Lactobacillus gasseri* and *Bifidobacterium bifidum* mutants obtained in this study would be utilized as a starter culture to develop probiotic meat products.