P-103

# Comparative Evaluation of Probiotic Activities of *Bifidobacterium longum* MK-G7 against Commercial and Type Strains of Bifidobacteria

Jung, Hoo-Kil, Eung-Ryool Kim, Geun-Eog Ji[1],
Jong-Hyun Park[2], Sung-Kwan Cha[3], and Suk-Lak Juhn
R&D, Central Research Institute, Maeil Dairy Industry Co., Ltd., Seoul, Korea
[1]Department of Food Science and Nutrition, Seoul National University, Seoul, Korea
[2]Department of Food and Bioengineering, Kyungwon University, Sungnam, Korea
[3]Korea Food Research Institute, Sungnam, Korea

Comparing certain enzymatic activities of *Bifidobacteria* strains, *Bifidobacterium longum* MK-G7 showed the highest $\beta$-galactosidase and less $\beta$-glucosidase activities. *Bifidobacterium longum* MK-G7 showed the highest lactic and acetic acid production. *Bifidobacterium longum* MK-G7 also showed higher acid tolerance against HCl and acetic acid, however, *Bifidobacterium infantis* Y-1 showed the lowest acid tolerance and more than 4 log cycle of viable cell count decreased owing to acid injury. Viable cell count of *Bifidobacteria* strains decreased more 1.5 log cycle owing to oxygen toxicity, with the exception of *Bifidobacterium longum* MK-G7, *Bifidobacterium infantis* Y-2, *Bifidobacterium longum* Y-3, *Bifidobacterium longum* Y-6, and *Lactobacillus rhamnosus* Y-7. And *Bifidobacterium infantis* Y-2, *Bifidobacterium longum* Y-3, *Bifidobacterium longum* Y-6, and *Bifidobacterium longum* RD-13 showed the highest bile tolerance. By the way, *Bifidobacterium longum* MK-G7 showed medium bile tolerance. *Bifidobacterium longum* MK-G7 only showed much higher antibiotic resistance against both tetracyclin and penicillin-G in the MIC level of 24.80 and 0.52 mg/l, respectively. *Bifidobacterium longum* MK-G7 showed higher degree of cholesterol assimilation in the level of 28.3 %, followed *Bifidobacterium breve* ATCC 15700 and *Bifidobacterium longum* RD-13. *Bifidobacterium longum* MK-G7, *Bifidobacterium lactis* Y-4, *Bifidobacterium longum* Y-6, and *Bifidobacterium bifidum* ATCC 29539 showed more than 80 % of antimutagenicity against NQO. As the cytokine production such as TNF(tumour necrosis factor)-$\alpha$. and IL(interleukin)-6, and NO(nitric oxide) increased depending upon increment of *Bifidobacterium longum* MK-G7 cell concentration, it was considered that *Bifidobacterium longum* MK-G7 enhanced immunopotentiating activity *in vitro*. When freeze-dried *Bifidobacterium longum* MK-G7 was administered, the mice did not die from all feeding groups. Therefore, it was proved that administration of *Bifidobacterium longum* MK-G7 even at the concentration of 6 g/kg of body weight did not show acute toxicity at all. When fermented milk with *Bifidobacterium longum* MK-G7 was administered to human volunteers, viable cell count of *Bifidobacteria* in the faeces increased up to 0.5 log cycle more than before administration. Especially *Bifidobacterium longum* MK-G7 did inhibit the growth of *Bacteroides* in the level of 1.0-1.5 log cycle.