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Fermented metabolites from Lactic acid bacteria promote innate immune functions against pathogen

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Introduction:

Probiotics, including live bacterial cells, can improve the intestinal microflora and modulate immune functions. Probiotics have also been shown to function as antimicrobial effectors, and oral administration of certain lactic acid bacteria (LABs) can prevent pathogenic infection through the stimulation of host immunity. Although the immunomodulatory effects of fermented products have been reported elsewhere, the mechanisms by which cell-free products, i.e., “fermented metabolites (FM)”, stimulate the immune system remains poorly understood. In this study, we examined immunological properties together with bacteriocidal activity using *Listeria monocytogenes* in FM administered mice, to investigate whether FM have effects on the stimulation of innate immune functions.

Materials & Method:

C57BL/6 mice were administered the water containing FM from *Lactobacillus gasseri*. After 4 weeks of administration, peripheral and splenic lymphocyte subsets in the mice were examined by FCM analysis, and also gene expression analyses of cytokines and TLRs in those mice were examined by RT real time –PCR. Furthermore, FM-treated mice were subjected to infection study using *Listeria monocytogenes*, and listeriocidal effects were evaluated on 3 days post infection.

Results & Discussion:

In FM terated mice, the numbers of CD4 and CD8 positive T-cells were increased in FM treated mice. The expressions of transcription factor such as myd 88, NF-kb and TLR-9 gene in splenocyte were up regulated in the FM treated mice as compare to the control mice. The cytokine genes, such as TNF-alpha, and IFN-gamma expressions in splenocyte increased in FM treated mice. These results suggest that FM may have effects on the stimulation of the transcription factor lead to the cytokines gene expressions. The results imply that FM treatment accelerate innate immunity function and reinforcement the resistance of microorganism infection. It also suggested that FM might take an important role for function of fermented product including live cells.

Keywords: prebiotics, innate immunity, cytokine, Listeria monocytogenes