

CHAPTER VI

CONCLUSIONS

A number of probiotic *Lactobacillus* candidates were isolated from feces of human volunteers and investigated for inhibition of pathogens and modulation of TNF- α production. About 500 isolates were tested against gastrointestinal pathogens, and the results revealed that 4 isolates exhibited weak inhibitory effect against *V. cholerae* non O1 by agar well diffusion assay. The weak inhibitory activity also observed in 114 isolates toward *V. cholerae* and 32 isolates toward *S. enterica* by agar spot method. The inhibitory activity whether it was due to acid production or some bacteriocins production was unclear. Immunomodulation on TNF- α production in LPS-activated THP-1 cells by forty-six *Lactobacillus* isolates were investigated and the results revealed that 12 isolates significantly inhibited TNF- α production. Strain TH58 displayed the most potent TNF- α inhibitory activity (70-80% inhibition). However, TH58-mediated suppression of TNF- α production was not due to NF- κ B signaling pathway.

In this study, our results demonstrated that *Lactobacillus* isolates exhibited difference properties in modulation of TNF- α production; TH14, TNF- α stimulatory strain was able to stimulate TNF- α production with and without LPS. While TH58, TNF- α inhibitory strain did not stimulate TNF- α production by itself and exhibited TNF- α inhibitory activity. TH64, non-TNF- α stimulatory and non-TNF- α inhibitory strain did not stimulate TNF- α production by itself and did not inhibit TNF- α production in LPS-activated THP-1 cells.

The results of present study indicated that most anti-pathogenic and anti-inflammatory strains belonged to the *L. plantarum* so that it can be considered to be an important species in these human volunteers which was able to inhibit pathogen and suppress TNF- α production. It is interesting that *Lactobacillus* TH58 with the most potent TNF- α inhibitory activity was identified as *L. saerimneri* which is a novel finding as the first documented *L. saerimneri* isolate of human origin, and this strain exhibited immunomodulatory activity. Genotypic characteristics indicated that TH58 strain was genetically distant from all of these TNF- α inhibitory strains, and non-TNF- α inhibitory strains showed 60-78% similarity.

However, the modulation of anti-inflammatory cytokine profiles by TH58 as well as possible mechanisms of TH58-mediated suppression of TNF- α production should be addressed for further investigations to understand the implication of TNF- α inhibition on cytokine profiles and regulation of TNF- α production by *Lactobacillus* TH58 strain.