

CHAPTER 5

CONCLUSIONS

Lactic acid bacteria are able to produce a large variety of compounds which give fermented foods their characteristic flavor and color, and also improved safety in food. In this study, the production of antimicrobial compound and bacteriocin producing by LAB strains obtained from the variety of fermented meat product has been investigated in order to find the LAB strains with potential application in food.

Studies on the 50 sample of fermented meat products showed 38 of 66 isolates of the observed LAB were produced antimicrobial substance against the four indicator microorganisms; *E. coli* TISTR73, *B. cereus*, *S. aureus* and *S. enteritidis*. A total of 38 isolated were recorded as positive, producing inhibition clear zones on agar media. The results shown that 20 isolates were inhibited all of four indicator microorganisms, while other 13 and 5 isolates inhibited only 3 and 2 of indicator microorganisms, respectively.

The activity against 4 indicator microorganism, of the antimicrobial compounds produced by these bacteria isolate by using paper disc diffusion assay. These isolate presented a inhibitory spectrum since they were able to inhibit many of the inhibitor microorganisms test. But the result of the paper disc diffusion assay did not stability for potential inhibitory substance against the indicator microorganisms. Thus, agar well diffusion assay was one method for screening antimicrobial compound in this study.

The result of the well diffusion assay showed that 14 isolates were sensitive to 0.5 g/ml (w/v) β -glycerophosphate after added to the concentrated supernatants from those 38 isolates, while 24 isolates were not sensitive to 0.5 g/ml (w/v) β -

glycerophosphate action. That means the potential to inhibit the indicator microorganisms of these 24 isolates are the result of lactic acid. Thus, it was possible that the others 14 isolates are bacteriocins producing microorganism. Then proteinase K and β -glycerophosphate were added to the reaction. It was found that 3 samples from isolate FF2-02/3, FF4-01/5 and FP5-01/4 of 14 isolates lost the ability against indicator microorganisms because the bacteriocin which produced by these three LAB was degraded by proteinase K and the effect of lactic acid was omitted by β -glycerophosphate (Table 4.4). Three of the 14 assumed bacteriocin-producing isolates originated from fermented meat products. Isolate FF2-02/3 had inhibitory activity against all four indicator microorganisms. Isolate FF4-01/5 which inhibited *E. coli* TISTR73, *S. aureus* and *B. cereus*, while isolate FP5-01/4 inhibited *E. coli* TISTR73, *S. aureus* and *S. enteritidis*. These 3 isolates were to select potential probiotics by characterizing the acid and bile tolerance, it was found that all of 3 isolates had the best survival capacities under acidic conditions at pH 4 and could survive at 0.15% bile salts after incubated at 4 hours. Two isolates, FF4-01/5, FP5-01/4 and FF2-02/3 of 3 bacteriocin producing bacteria were identified as *Lactobacillus* sp., based on biochemical tests. To confirm the phenotypic method of the three isolates, the partial nucleotide sequence of the 16S-rRNA gene were determined. Of these isolates, FF4-01/5, FP5-01/4 were identified as *Lactobacillus pentosus*, while isolate FF2-02/3 identified as *Lactobacillus plantarum*.

In this study, we have found that LAB isolates with a produce antimicrobial compound for inhibited indicator microorganisms. The authors hope that the results of this study can offer useful information for the improvement of fermented meat production in Thailand.