

CHAPTER VI

CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

This study demonstrated that LAB from both autochthonous and allochthonous were potentially suitable to be used as starter culture for fermenting the chili mash. These isolates have their own specialty in modifying the flavor profile as well as reducing the pH of chili mash. Descriptive test and hedonic test showed that fermented chili mash inoculated with three LAB isolates; allochthonous starter *L. plantarum* ALO1, *L. pentosus* ALO2 and autochthonous starter *L. plantarum* AU2 were responsible for unique flavor producer in fermented chili mash. Within 28 days of fermentation time, inoculation LABs into fermented chili mash resulted into rapid fermentation as early after 7 days of fermentation. Pre-pasteurization resulted to controlled fermentation. *L. pentosus* ALO2 was chosen to be the best LAB strain to conduct the chili mash fermentation. It grew well and stable with final count $>\log_{10} 6$ and inhibit mold and yeast growth $<\log_{10} 2$. Inoculation *L. pentosus* ALO2 also resulted to rapid pH reduction and expectable titratable acidity increased during the 28 days fermentation. Profile of volatile organic acid compound analyzed by static GC-MS headspace resulted to identification of ethanol as the most abundant compound present in fermented chili mash. It also was reported that the three LAB isolates were unique between each others. Each of the isolates produced different trend of volatile organic compound which indicated that they are different flavor producer in fermented chili mash.

6.2 RECOMMENDATIONS

Evaluation of single starter in fermented chili mash was resulted into rapid fermentation and good flavor development in fermented chili mash. However, combining the starter together as multicultural for optimum fermentation was not determined, and their effectiveness and safety in food were not attempted. Sensory acceptance of the final product of fermented chili mash that resembled the commercial characteristics which is acceptable by consumers can be developed. Therefore it further studies was suggested as listed below:

1. To study compatibility of multicultural starter between autochthonous and allochthonous to conduct fermentation for fermented chili mash. Mixed-cultural strains that consist of ALO1, ALO2 and AU2 can be studied for their microbial survivability and changes in physiochemical profile of fermented chili mash.
2. To study the shelf-life of fermented chili mash. This study can be done after the process of fermentation. The changes in product characteristics as well interference of spoilage microorganisms has to be studied in producing a shelf-stable product.
3. To develop finished products of fermented chili mash that meet the criteria of traditional hot fermented sauce. Detail study on additional ingredients such as vinegar, salt and preservatives has to be determined in producing the finished product of fermented chili mash that is commercially acceptable by the consumers.