EFFECT OF LACTIC ACID BACTERIA ON THE PHYSICO-CHEMICAL AND SENSORY PROPERTIES OF BANANA KETCHUP

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ABSTRACT

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The study was conducted from September 2015 to March 2016 at the BS 205 Laboratory, Department of Biological Sciences; Microbiology Laboratory and Food Processing Laboratory of the Institute of Food Science and Technology, College of Agriculture, Food, Environment and Natural Resources, Cavite State University, Indang, Cavite to determine the effect of lactic acid bacteria on the physico-chemical and sensory properties of banana ketchup. Specifically, the study aimed to: 1. isolate lactic acid bacteria (LAB) from fermented fruits: *saba*, dragon fruit, *kaong* fruit, and mixed fruit (banana, pineapple and *kaong*); 2. identify the strain of LAB isolates from fermented fruit; 3. identify the fermented fruit that has acceptable strain of LAB to be used in banana ketchup production; 4. determine the behavior of LAB in the banana ketchup treatments in terms of colony count; and 5. determine the changes brought by the added LAB, isolated from fermented fruit, on the physico-chemical and sensory properties of banana ketchup.

The lactic acid bacteria used in this study was isolated from fermented fruits: *saba*, dragon fruit, *kaong* fruit, and mixed fruit. Only the fermented *kaong* fruit was positive for the presence of LAB based on the gram staining and catalase test. This was further confirmed through API Kit that the strain of LAB is *Lactobacillus paracasei ssp paracasei 3* which further was identified as "Acceptable Identification to the Genus". To further identity the effects of LAB from the fermented fruit on the physico-chemical and

sensory properties of banana ketchup, control LAB was isolated from commercial yogurt drink. Banana ketchup with LAB from fermented *kaong* and commercial yogurt drink were inoculated for one month period.

Physico-chemical properties were conducted in weekly intervals then after 4th week, sensory evaluation was conducted. The effect on physico-chemical properties of banana ketchup with added LAB had differences compare to the control banana ketchup. There was no significant differences on the pH, water activity (Aw), total soluble solids (TSS) and viscosity of banana ketchup with LAB from *kaong* fruit and commercial yogurt drink but significantly different to banana ketchup without LAB. As pH of banana ketchup with LAB increases, the % titratable acidity decreases. These results on effects on physico-chemical properties of banana ketchup exceed to the standard criteria for banana ketchup. Based on the statistical analysis, sensory properties of banana ketchup in different treatments had no differences.

Fermented *kaong* fruit and fermented mixed fruit had lactic acid bacteria. Only fermented *kaong* fruit has acceptable genus which is identified as *Lactobacillus paracasei ssp paracasei 3*. Banana ketchup with LAB from *kaong* and yogurt increases their pH, decreases the water activity, titratable acidity, TSS and viscosity on the 4th week of incubation. There are no significant differences in all sensory parameters between control banana ketchup and banana ketchup with added LAB form fermented *kaong* fruit and from commercial yogurt drink. Based on the results of this study, further studies can be conducted particularly on the following: other fruits should be studied for possible sources of LAB; LAB extracted from *kaong* and mixed fruit can be used as probiotics in other products; and further study should be done to identify LAB from mixed fruit.

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