EFFECTS OF ADDED STARTER CULTURE FROM FERMENTED FRUITS IN ACETIC ACID FERMENTATION OF SUGAR PALM (*Arenga pinnata*) SAP

THESIS

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ABSTRACT

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A study was conducted to describe the effects of adding starter culture from fermented fruits in the production of sugar palm vinegar. Specifically, the study aimed to produce and characterize the produced vinegar in terms of physico-chemical properties and sensory properties.

Titratable acidity, pH, total soluble solids and alcohol content were monitored every 3rd day of nine-day fermentation period. Sugar palm vinegar samples were produced in four treatments: Treatment 0 as the natural fermentation of sugar palm sap, Treatment 1 (fermentation of sugar palm sap added with starter culture from fermented *kaong* fruit), Treatment 2 (fermentation of sugar palm sap added with starter culture from fermented mixed fruit) and Treatment 3 (fermentation of sugar palm sap added with starter culture from mother culture). Two percent of the starter culture was added to the sugar palm sap.

After the fermentation period, all treatments were observed to have the same pattern of increasing titratable acidity and decreasing pH, alcohol content and total soluble solids. Vinegar samples with added starter culture from fermented fruits (T1 and T2) had the highest value in terms of titratable acidity. Also, these treatments were evaluated to have higher sensory scores and were described to have more desirable aroma.

Results of the study indicates that, addition of starter culture from fermented fruits can facilitate improvement in the production of sugar palm sap to vinegar.

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INTRODUCTION

Vinegar is one of the world's oldest cooking ingredient and food preservation method (Vinegar Institute, 2005). It is a product of acetic acid fermentation process. Vinegar can be made from various sources such as fruit juice and sap from coconut, nipa and sugar palm (Ghosh *et.al*, 2012).

Sugar palm or locally known as *kaong* is considered as a minor forest species, that provides two important products, the sweet *kaong* gel and vinegar. *Kaong* vinegar is processed from the sweet sap which is classified as one of the best products of the Philippines which can compete with other brands locally and abroad (Florido & de Mesa, 2003).

The process of vinegar production is commonly through fermentation using *Acetobacter* microorganisms which convert ethanol into acetic acids and oxidase acetate and lactate to CO_2 and water (Kommanee, *et. al.*, 2012). *Acetobacter* are gram negative