ANTIBACTERIAL ACTIVITY AND PHYTOCHEMICAL ANALYSIS OF FORMULATED COFFEE-BASED BEVERAGE SUPPLEMENTED WITH LEMONGRASS AND HONEY

THESIS

JANWYNDELL STYPHEN M. BUGARIN

College of Arts and Sciences

CAVITE STATE UNIVERSITY

Indang, Cavite

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ABSTRACT

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Coffee has been consumed by most people as beverage. This allowed some scientific researches to find organic products which can supplement the said beverage, providing new flavors. Hence, the study aimed to formulate a coffee-based beverage supplemented with lemongrass and honey, and further assess its antibacterial and phytochemical activity.

Seven formulations of coffee-based beverages were made using different concentrations of coffee, lemongrass, and honey. These formulations were subjected into sensory evaluation to determine the top three most acceptable formulations. Antibacterial activity of the three formulations was assessed as well as the aqueous and ethanolic extracts of the organic products used. Phytochemical analysis was also conducted in the extracts of the organic products used.

Treatments 1, 5, and 7 were the three most accepted beverages based from the sensory evaluation. The treatments, as well as the extracts of the organic products used, possess antibacterial activity against *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Escherichia coli*, *Salmonella typhimurium*, *Bacillus subtilis*, and *Enterococcus faecalis*. Phytochemicals such as carbohydrates, tannins, saponins, alkaloids, cardiac glycosides, flavonoids, terpenoids, and steroids, were also identified from the extracts used which has a beneficial role in regards with the antibacterial activity of the extracts and the formulations.

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Janwyndell Styphen M. Bugarin

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INTRODUCTION

Many organic materials such as plant based products and beverages that are available nowadays, have been tested for antimicrobial activity. One of these products is coffee. Coffee is one of the most popular and widely consumed beverages throughout the world due to its pleasant taste and aroma as well as its stimulant effect (Almeida *et al.*, 2006). In addition, it is recently discovered that a number of beneficial health properties have been attributed to coffee (Yen *et al.*, 2005; and Farah and Donangelo, 2006), including antibacterial activity. Coffee exhibits components such as caffeine, volatile and non-volatile organic acids, phenols and aromatic compounds which are known to have antimicrobial activity (Fardiaz, 1999) against *Staphylococcus aureus*, *Enterococcus faecalis*, *Pseudomonas aeruginosa*, and *Escherichia coli* (Almeida *et al.*, 2006 ; Monente *et al.*, 2015 ; and Runti *et al.*, 2015).

Coffee's bitter taste compels most people to add sweeteners to it. Honey, one of the most common sweeteners for coffee, is being used as an alternative instead of normal