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**EFFECT OF DIFFERENT FORMULATION ON
EFFICIENCY OF HONEY EFFERVESCENCE
TABLET**

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ABSTRACT

Honey has been utilized by humans for a very long time, both traditionally and in modern ways. This is due to honey's many benefits, which make it one of the most sought-after foods and medicines globally. Its benefits include a great source of carbohydrates, acting as a natural antioxidant to prevent or delay most cell damage, acting as an antibacterial because of its antioxidant, anti-bacterial, and anti-inflammatory properties, reduce headache and many more. However, usual way of consuming honey such as raw is proven to be quite taxing and quite unpleasing. One of the ways to solve this are to prepare stingless honeybee effervescent tablet as it is convenient to be brought anywhere, easy to digest and great choice for those who have difficulties in swallowing honey directly. 5g of diluted stingless honeybee are tested to determine its physiochemical properties such as pH, moisture content, hygroscopicity and refractive index which are average around 3.9, 15.62%, 16.58 and 1.45 respectively. Three different formulations have been prepared to test efficiency of stingless honeybee effervescent tablet with different formulation namely formulation one (F1) sodium bicarbonate 1.00g and citric acid 1.00g, formulation two (F2) sodium bicarbonate 1.00g, citric acid 1.50 g and formulation three (F3) sodium bicarbonate 3.44g, citric acid 1.44 g and 1.65 g tartaric acid. The efficiency of tablets is determined by effervescence time, pH and solubility of the tablets.

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CHAPTER ONE

BACKGROUND

1.1 Introduction

Honey has been utilized by humans for a very long time, both traditionally and in modern ways. This is due to honey's many benefits, which make it one of the most sought-after foods and medicines globally. These benefits include a great source of carbohydrates, acting as a natural antioxidant to prevent or delay most cell damage, acting as an antibacterial because of its antioxidant, anti-bacterial, and anti-inflammatory properties, and many more other benefits (Samarghandian S, (2017)

Honey is a sweet substance made by bees that is stored in its beehive in a hexagonal shape called a honeycomb. Honey mainly composes of sugars, proteins, organic acids, pigments, minerals, and many other elements that is beneficial to human bodies. Typically, honey contains 80–85% carbohydrates, 15–17% water, 0.3% proteins, 0.2% ashes, and trace amounts of vitamins, phenols, and amino acids. It is also had pH ranges between 3.5 and 5.5 and moisture content of 13–20% depending on the location of where the honey its harvested (Khan SU, (2017).

Honey has been consumed by humans in various ways such as eaten raw orally, mixed with other ingredients, consumed in supplements and others. This convenient quality of honey makes it very flexible to be used in many various types of food and supplements. In fact, people keep researching many ways to put honey in their daily necessities. One of these ways are people considering making honey into convenient type of supplements such as tablets, powder, cosmetic products and many more.

Tablets is one of the most common supplement forms that can be found these days. This is because of the tablet is a proven to be reliable and safe as it is a chosen form of most pharmaceutical medication. Shelf life of tablet also is very long compared to other form of supplement (Zane Temova, (2017). Tablets also have good stability between ingredients inside, making them very flexible to be added with other

ingredients. There are many types of tablets such as standard tablets, chewable tablets, effervescent tablets, and others.

In this era, people choices in buying their product have rapidly increased. People consider more than one aspect in buying their product such as functionality, convenient, non-time-consuming and others. Supplement in form of effervescent tablets is one of the example people like to use in these days. Honey in form of effervescent tablets is good way to retain its original flavor and nutrients of honey and is convenient to carry and stable for long-term storage (Patel SG, et al,2018).

1.2 Literature Review

1.2.1 Stingless Bee Honey

Stingless bee honey, a biological material that naturally occurs and developed from nectar is widely sought-after mainly for its specialty food and medicinal properties. Other than usual composition of honey which contained water, glucose, fructose, proteins, minerals, organic acids, and vitamins, stingless honeybee also contains sugar trehalulose (Fletcher, et al, 2020). which is not found in other honey or as a major component in other food. Trehalulose is known as rare and healthy sugar because of its low glycemic index that helps reduce blood sugar level in the body.

1.2.2 Physicochemical Properties of Honey

1.2.2.1 pH

pH is an expression of hydrogen ion concentration in water. pH scale is logarithmic and inversely indicates the concentration of hydrogen ions in the solution. It is expressed by term $\text{pH} = -\log_{10}(\text{H}^+)$ (U.S. E.P.A. What is pH?). pH scale scales from pH 0 to 14 where at pH 7 the pH is neutral, while if the pH is lower than 7 it is acidic and if it is higher than 7, it is alkali or base. The strength of the acidity or base scales from the lower the number from 7, more acidic it is while the higher the