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INHIBITORY OF HENNA ON PANCREATIC ENZYMES: EXTRACTION EFFECT

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ABSTRACT

Obesity is known as one of the biggest killer which it is the bigger compared to hunger. The obesity trends are kept increasing by year causing the major chronic diseases increasing worldwide. Therefore, this research was done in order to discover new alternative to treat obesity by utilizes the natural sources instead of using chemical drugs that have adverse side effects. The main focus of this research was to determine the content of gallic acid and quercetin present in *Lawsonia inermis*. This research also was done to study the inhibition effect in the *L.inermis* extract towards pancreatic lipase activity. *L.inermis* or famously known as henna contains variety type of phytochemical compounds such as phenolic compound. Researches before have proved that phenolic compound have anti-inflammatory and anti-oxidant properties which makes herbs plant such as henna have a potential in becoming the inhibitor for pancreatic lipase activity.

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Henna which is categorized under the family of *Lythraceae* is a shrub that is naturally grown. It is widely distributed from north-east Africa to India. Scientifically, henna is also known as *Lawsonia inermis*. Some common names of *L.inermis* in different languages are: Henna (English), lalle (Hausa), lali (Yoruba), mehndi/heena (Urdu), mehndi (Hindi). Ancient history of India describes diverse uses and appreciable role of henna in Ayurvedic or natural health medicines. It can withstand in both condition which are in low air humidity and during drought. Higher temperatures condition is required in germination, growth and development in henna (Orwa *et al*., 2009).

Henna becomes one of the valuable plants due to its quality and product variations. Every single part of henna plant is very useful and has also been used in traditional medicine in treating jaundice, spleen enlargement, affliction of calculus and skin diseases (Sharma *et al*., 2016). Based on the previous research, henna is reported to contain carbohydrates, proteins, flavonoids, tannins and phenolic compounds, alkaloids, terpenoids, quinones, Coumarins, xanthones and fatty acids. Currently, henna has been commercialised widely in the market in the form of dye to be used in hair coloring and temporary body art. The extract of hennas' leave has been shown to possess analgesic, anti-inflammatory, antibacterial, antimicrobial, antioxidant, anticancer and other immunity properties. Since henna is rich in benefits, henna-based product needs to be developed and explored to widen the usage of the leaves. Henna is also believed to have a potential in the obesity treatment due to its anti-obesity properties.

Pancreatic lipase is the enzyme that causes for digestion and absorption of triglycerides. Inhibition of pancreatic lipase may be an excellent strategy for anti-obesity treatment if energy intake from dietary fat is decrease (Kim *et al*., 2016). Pancreatic lipase inhibitors prevent the breakdown of dietary fat into fatty acids, thereby reducing their absorption in the gut (Shahu *et al*., 2017).

Up-to-date, no study was found to investigate the anti-obesity effect of henna extract, in-vitro or in-vivo. Therefore, in-vitro inhibition property of the porcine pancreatic lipase