

UNIVERSITI TEKNOLOGI MARA

**INHIBITORY OF LAWSONIA INERMIS LEAVES
EXTRACT ON PANCREATIC ENZYMES: EFFECT
OF DRYING TEMPERATURE**

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ABSTRACT

Pancreatic lipase is the enzyme responsible for the digestion and absorption of triglycerides. It is one of the most widely studied methods used to determine the potential activity of natural products to inhibit the absorption of dietary fats. Decreasing the intake of energy from dietary fat by inhibiting this enzyme can be excellent strategy for preventing and treating obesity. The pancreatic lipase inhibition activity of *L. inermis* or famously known as Henna was evaluated in vitro. This research aimed to discover the potential of *L. inermis* crude extract as a new and safe alternative lipase inhibitor to treat obesity by utilizes the natural sources, instead of using chemical drugs. The phenolic (gallic acid) and flavonoid (quercetin) compound in this plant are expected to promote inhibitory activity towards pancreatic lipase enzyme. The part of this plant selected was leaves. The extraction of leaves with distilled water as solvent were analyzed for phytochemical compounds through Fourier Transform Infrared Spectroscopy (FTIR), Total Flavonoid Content (TPC), Total Phenolic Content (TPC) and spectrophotometer for pancreatic lipase inhibition analysis. FTIR analysis of the extracts of *L. inermis* revealed the presence of hydroxyl functional group in leaves extracts. This validate the presence of phenolic compounds in the leaves extract for pancreatic lipase inhibition. The highest quantity TPC and TFC value were 93.24 mg of GAE/g of extract and 301.85 mg of QE/g of extract respectively at 60°C of drying temperature. The potential role of plant which is *L. inermis* that have been investigated for their pancreatic lipase inhibitory activity. It was found that the highest percentage inhibition at 60°C of drying temperature in the 10 mg/mL of the extract. These results suggest that the content of gallic acid and quercetin in the samples could be as antiobesity agent.

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CHAPTER 1

INTRODUCTION

1.1 Background Research

Lawsonia inermis is a monotypic species of the genus *Lawsonia* and belonging to *Lythraceae* family. It popularly known as 'Henna' or 'Mehndi'. *L. inermis* is used to colour skin, hair, fingernails, leather, silk and wool since old time (Hema, Kumaravel, Gomathi, & Sivasubramaniam, 2010). The plant symbolizes prosperity, auspiciousness, and happiness in South Asian countries such as India, Pakistan, Iran and UAE. It is widely used in a variety of religious and ritualistic ceremonies of Hindu and Muslim communities. Muslim males used henna as hair and beard dye considering it as a Sunnah. Muslim women in Middle East were encouraged to dye their nails with henna to display femininity and discerning their hands from men (Kortsch, Christine, & Bayles, 2009). But nowadays, many latest research studies have shown that henna possess a wide range of biological activities such as anti-fungal, anti-bacterial, anti-inflammatory, immunomodulatory, anthelmintic, anti-cancer, anti-oxidant anti-parasitic, virucidal, analgesic, hepatoprotective, and allelopathic.

Recently, there has been a renewed interest in the search for herbal remedies for weight reduction. (Moro & Baslie, 2000). Medicinal plants continue to play a role as abundant reservoir of bioactive compounds that could have beneficial effects on weight loss. This is consequent upon the fact that drug treatment of obesity, despite short-term benefits. It often associated with rebound weight gain with side effects after the cessation of drug use (AbdollahI & Afshar-Imani, 2003). Preventative efforts at the societal and individual levels to address excessive caloric intake are currently not been met. Worse still, surgical interventions used in some cases to treat obesity are not appropriate (Hardeman, Griffin, Johnston, Kinmonth, & Wareham, 2009). There is the need to continue the search for medicinal plants for possible discovery of novel drugs