

**KINETIC STUDIES ON PANCREATIC LIPASE INHIBITION FROM *LAWSONIA*
*INERMIS***

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ABSTRACT

Obesity and its associated diseases and coronary heart diseases are a major challenge for our society. An important target for the treatment of obesity includes the development inhibitors of nutrient digestion and absorption. Pancreatic lipase is the enzyme responsible for digestion and absorption of triglycerides, being its inhibition one of the widest studied methods used to determine the potential activity of natural products to inhibit dietary fat absorption. Decrease of energy intake from dietary fat through inhibition of this enzyme may be an excellent strategy to prevent and treat obesity. The inhibitory activity on pancreatic lipase enzyme of *Lawsonia Inermis* or *henna leaves* was evaluated using the spectrophotometer to get the concentration. Inhibition of pancreatic lipase are found by using the michelis menten equation, lineweaver-burk, hanees wolf plot and eadie hofstee plot. The enzyme kinetics were obtained with different concentration of substrate (cooking oil) and gallic acid, quercetin, pancreatic lipase and buffer were the constant. Then the result was plotted to get the correct mode of inhibition.

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CHAPTER 1

INTRODUCTION

Lawsonia Inermis or more commonly known as henna has been used for dried skin, hair, fingernails, leather, silk and wool in all part of the world (Ashnagar and Shiri, 2011). The henna plant is very useful and has also been used as traditional medicine, headaches, bruises and also skin diseases. Phytochemicals inside the henna plant are an important source of vast medicine for health significance such as polyphenols compounds, flavonoids, gallic acid, quercetin, hennotannic acid and mannitol. (Santosh Yadav et al., 2013).

Nowadays, the anti-obesity drug for long term treatment were usually effective. In which the drug efficiency was apply through lipase inhibition enzyme which stops the absorption of dietary fat. The gastrointestinal side effect had limited the usage of the drugs. The obesity prevention might make the obesity-related diseases decrease in numbers and can also reduce the immoderate costs and undesirable side effects. Hence, the anti-obesity treatment now targets more on focusing the noxious and natural products. The dietary of fat inhibition is one of the methods for the effort to reduce the energy intake (Gyo-Nam Kim et al., 2016). Therefore, henna is also belived to have a potential in the obesity treatment due to its antiobesity properties where it is also to inhibit pancreatic lipase.

Pancreatic lipase, secreted by the pancreas is a key enzyme which responsible for the digestion of 50%-70% of fat into monoglyceride and free fatty acids. Therefore, one of the main points for anti-obesity agent is ability to inhibit pancreatic lipase. (Abd Rahman et al., 2016). There have been widespread statements on the beneficial effects of different plants extracts especially based on their antioxidant properties. They exhibit ability to scavenge free