

**ANTI-OBESITY AND ANTIDIABETIC PROPERTIES OF TURMERIC
LEAVES EXTRACT (*Curcuma longa*)**

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**Final Year Project Submitted in
Partial Fulfilment of the Requirements for the
Degree of Bachelor of Science (Hons.) Applied Chemistry
in the Faculty of Applied Sciences
Universiti Teknologi MARA**

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This Final Year Project Report entitled " **Anti-Obesity and Antidiabetic Properties of Turmeric Leaves Extract (*Curcuma longa*)**" was submitted by Nurul Syaza Binti Rizuwan in partial fulfilment of the requirements for the Degree of Bachelor of Science (Hons.) Applied Chemistry, in the Faculty of Applied Sciences, and was approved by

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ABSTRACT

ANTI-OBESITY AND ANTIDIABETIC PROPERTIES OF TURMERIC LEAVES EXTRACT (*Curcuma longa*)

Obesity and diabetes are on the rise worldwide, and they are linked to serious health risks such as heart disease and cancer. Despite available medications, there is still a search for safe alternatives, and turmeric leaves (*Curcuma longa*) appears to be a promising candidate. This study aims to extract turmeric leaves using various solvents and evaluate their antidiabetic and anti-obesity properties. Turmeric leaves sourced from the local market in Arau underwent a 24-hour maceration process using three solvents—ethanol, n-hexane, and acetone. For anti-diabetic properties, the α -amylase inhibitory and reducing sugar content assays were employed. This involved preincubation with different concentrations of the plant extract, with absorbance measured at 540 nm. Simultaneously, the porcine pancreatic lipase inhibitory assay was performed to assess the anti-obesity property of the crude extracts. The maceration process employing ethanol, n-hexane, and acetone as solvents has resulted in varying yield, with the most substantial extraction achieved by the ethanolic extract (4.37%), followed by acetone (4.10%) and n-hexane (2.49%). The α -amylase inhibition assay revealed notable inhibitory activity in all three extracts, with the ethanolic extract exhibiting the highest inhibition (84.58% at 500 $\mu\text{g/ml}$), surpassing both n-hexane and acetone extracts. Acarbose, acting as a control, demonstrated the inhibition of 86.76%. Graphical analysis yielded IC_{50} values, indicating the ethanolic extract's superior inhibitory activity at 206.06 $\mu\text{g/ml}$, outperforming the n-hexane and acetone extracts. The ethanol extract also had the highest reducing sugar content (304 ± 3.30 mg GE/g), while n-hexane and acetone extracts had lower values. In the porcine pancreatic lipase inhibition assay, the ethanolic extract showed decent activity (91.54% at 500 $\mu\text{g/ml}$, IC_{50} of 123.16 $\mu\text{g/ml}$). These findings suggest that turmeric leaves could be a safe and effective alternative treatment for obesity and diabetes.