

**EVALUATION OF FENUGREEK SEEDS (*Trigonella foenum-graecum*) AS  
BLOOD SUGAR REDUCING AGENT**

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## ABSTRACT

### EVALUATION FENUGREEK SEEDS (*Trigonella foenum-graecum*) AS BLOOD SUGAR REDUCING AGENT

Diabetes is a condition characterized by elevated blood sugar levels due to insulin resistance. Conventional drugs such as metformin and sodium-glucose cotransporter-2 inhibitors (SGLT2i) are effective medicines in lowering blood glucose levels. However, these drugs can pose adverse side effects to the human body. Fenugreek seeds have been recognized as a treatment specifically in reducing the blood glucose level due to the presence of bioactive compounds namely alkaloids, amino acids, polysaccharides, and saponin. Further analysis was conducted as there was a finite study that involved the optimal extraction technique and enzyme inhibition activity of the fenugreek seed extract. This study aims to evaluate the fenugreek seed extract as a blood sugar-reducing agent. Initially, this research involves the extraction of the fenugreek seed using ethanol and hydroethanolic solvent via maceration method to identify the ideal extraction method. Then, the bioactive compounds of the extract can be validated using phytochemical tests and FTIR spectroscopy. The properties of the fenugreek seed in reducing the glucose level can be assessed by the quantification of total carbohydrate content and alpha-amylase inhibition test using the starch iodine method.

Analysis of data demonstrated that hydroethanolic extract poses a higher extraction yield compared to ethanolic extract. Both hydroethanolic and ethanolic extracts exhibit various kinds of phytochemical components that are responsible for the blood sugar-reducing agent. Meanwhile, analysis of the quantification of total carbohydrates shows the moderate content of carbohydrates for both extracts which are 2419.25 mg/L and 2231.20 mg/L respectively. Moreover, the alpha-amylase inhibitory assay indicates the strong alpha-amylase inhibitory activity of the hydroethanolic extract with the  $IC_{50}$  value of 0.12 mg/mL. To conclude, the fenugreek seed extract specifically hydroethanolic extract indicates the promising characteristics as a blood sugar-reducing agent. The data verifies its potential usage for diabetes remediation. However, further in-vivo studies, advanced extraction methods, and comparable findings using standard anti-diabetic drugs are required to verify the scientific efficacy of the fenugreek seed as a blood sugar regulator.