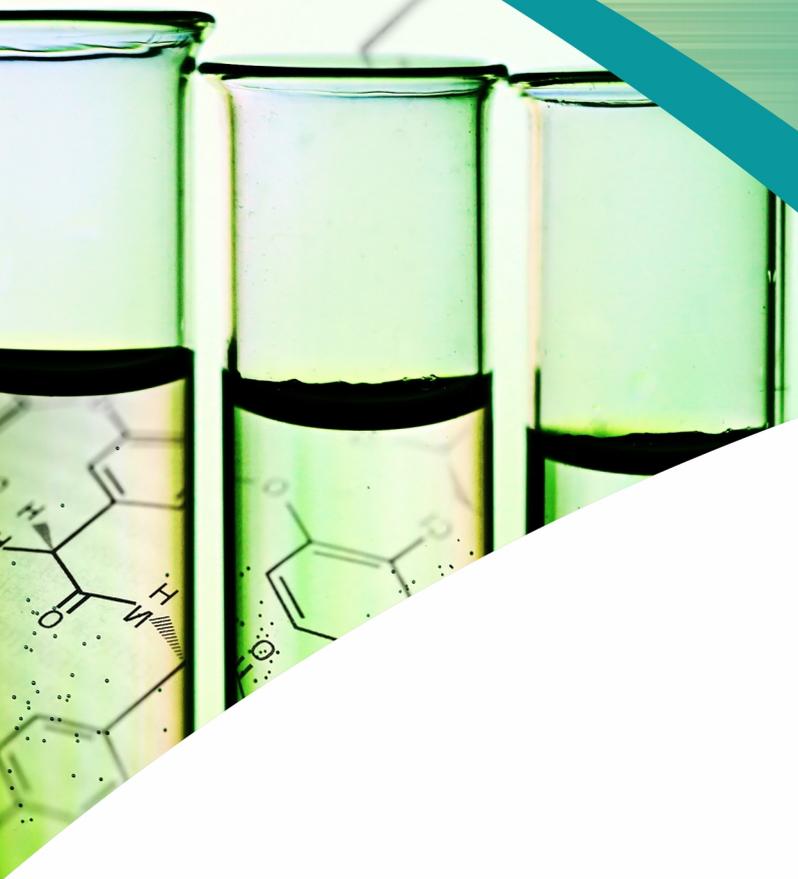


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Antiobesity Effects of Polyphenolic Enriched Fraction of *Alpinia Galanga* Rhizomes Through Inhibition of Pancreatic Lipase, Alpha Amylase and 3T3-L1 Adipocyte Differentiation

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ABSTRACT

Background and Aim: *Alpinia galanga* is an herbal drug widely known in ethno medicine that has been used for centuries to treat kidney disease, tumour, diabetes, bronchitis, gastritis, and other metabolic disorders. Recently, anti-obesity properties of *A. galanga* rhizomes have been designated. The current investigation is aimed to explore the anti-obesity effects of polyphenolic rich fraction of *A. galanga* rhizomes through the inhibitory action of dietary enzymes and adipocytes.

Methods: In the present study, a methanol extract and its various fractions (hexane, ethyl acetate, chloroform & aqueous) from the rhizomes of *A. galanga* were prepared and examined for total polyphenolic content (TPC) as well as inhibitory potential of pancreatic lipase and amylase enzymes. Evaluation of antioxidant potential was done using the free-radical scavenging capacity (DPPH) and nitric acid (NO) scavenging. Anti-inflammatory activity was done using albumin denaturation method. Adipocyte dysfunction at cellular level was corrected by examining on cell viability of 3T3-L1 preadipocytes using MTT assay.

Results: Ethyl acetate fraction of *A. galanga* rhizomes (AGEF) was found to have maximum polyphenol content (353.17 mg GAE/g) and flavonoidal content (91.07 mg/g QE). AGEF also exhibited maximum inhibitory activity against lipase (80.51 %, IC_{50} value 131.60 μ g/ml.) and amylase enzymes (74.74 %, IC_{50} value 150.20 μ g/ml) at 500 μ g/ml. AGEF did not induce any cell death up to 500 μ g/ml when examined for cell viability of 3T3-L1 preadipocytes using MTT assay. Oil Red O staining of 3T3-L1 cells showed considerable reduction in adipocyte differentiation and lipid accumulation in the presence of AGEF (500 μ g/ml) when compared with untreated 3T3-L1 cells. AGEF also suppressed lipid accumulation and glycerol-3-phosphate dehydrogenase (GPDH) activity without affecting cell viability in 3T3-L1 preadipocytes and adipocytes.

Conclusion: The results indicate the potential of AGEF being useful in mitigating obesity.



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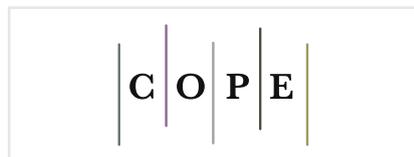
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