PRINT: ISSN 0973-5070 ONLINE: ISSN 2456-6772
STUDIES ON
ETHNO-MEDICINE

Full text open access online (Since 2007)
© Kamla-Raj S-EM 2025
PRINT: ISSN 0973-5070 ONLINE: ISSN 2456-6772
Ethno Med, 19(3): 137-148 (2025)
DOI: 10.31901/24566772.2025/19.03.708

Antidiabetic Activity of *Curcuma longa* Ethanolic Extract

Thiruvengadam Abarna[1*], Thirunethiran Karpagam[2], Angappan Shanmuga Priya[3], Badrinarayanan Varalakshmi[4], Vasudevan Suganya[5] and Abinaya Muthukumar[6]

[1,2,3,4,6]Department of Biochemistry, Shrimati Indira Gandhi College, Tiruchirappalli, Tamil Nadu, India
[5]PG Department of Biochemistry, Holy Cross College, Tiruchirappalli, Tamil Nadu, India

KEYWORDS Biocompounds. Human Pancreatic Alpha Amylase. Insulin Sensitivity. Phthalic Acid di (2-propylpentyl ester). Phytochemicals

ABSTRACT The increasing prevalence of diabetes is a significant threat to public health globally. Conventional therapy for diabetes enhances insulin sensitivity, insulin secretion, and reducing blood glucose levels. Nevertheless, the effects of medication therapy are not always adequate to keep blood glucose levels within acceptable ranges. Many medicinal plants are known to be beneficial for diabetes, and have been used as a base material for the preparation of drugs for diabetes. The current study focused on the phytochemical screening, GCMS, *in vitro* antioxidant, in *vitro* antidiabetic properties and *in silico* drug docking assay using ethanol solvent derived biocompound of *Curcuma longa* for its anti-diabetic properties. Nine phytochemicals were found in preliminary screening of ethanolic extract derived from *Curcuma longa*. The ethanolic solvent derived biocompound of *Curcuma longa* exhibited 35 peaks in the GC-MS analysis, with bis(2-ethylhexyl) terephthalate at 14.4 percent showing the highest peak at 17. Cyclohexasiloxane, dodecamethyl showed the second-highest peak at 14.2 percent at 3, and bis(2-propylpentyl) phthalate at 12.25 percent showing the peak at 14. The antioxidant activity was assessed using FRAP and DPPH free radical-scavenging activity. *Curcuma longa* ethanolic extracts at varying doses (500, 250, 100, 50 and 10µg/ml) showed DPPH inhibition percentages of 61.28 percent, 52.19 percent, 46.16 percent, 35.17 percent and 29.28 percent, respectively. For FRAP assay at varying concentrations (500, 250, 100, 50, and 10µg/ml), the corresponding inhibition percentages were 30.43 percent, 27.65 percent, 19.11 percent, 16.78 percent and 13.42 percent. The antidiabetic efficacy of *Curcuma longa* was assessed using the alpha amylase, alpha glucosidase, and β-galactosidase inhibitory tests. With regard to α-amylase, α-glucosidase, and β-galactosidase, the corresponding IC50 values was 97.28 µg/ml, 52.01 µg/ml and 54.51 µg/ml. bis(2-propylpentyl) phthalate (Pubchem id: SSS19194), alpha-amylase (human pancreatic) complexed with nitrite and acarbose demonstrated a binding affinity of -6.6 KCal/mole for *in silico* investigations.