

Antidiabetic and Admet Pharmacokinetic Properties of Grewia Lasiocarpa E. Mey. Ex Harv. Stem Bark Extracts: An in Vitro and in Silico Study

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Abstract : *Grewia lasiocarpa* E. Mey. ex Harv. (Malvaceae) is a Southern African medicinal plant indigenously used with other plants for birthing problems. The anti-diabetic properties of the hexane, chloroform, and methanol extracts of *Grewia lasiocarpa* stem bark were assessed using in vitro α -glucosidase enzyme inhibition assay. The predictive in silico drug-likeness and toxicity properties of the phytochemicals were conducted using the pKCSM, ADMELab, and SwissADME computer-aided online tools. The highest α -glucosidase percentage inhibition was observed in the hexane extract (86.76%, IC₅₀= 0.24 mg/mL), followed by chloroform (63.08%, IC₅₀= 4.87 mg/mL) and methanol (53.22%, IC₅₀= 9.41 mg/mL); while acarbose, the standard anti-diabetic drug was (84.54%, IC₅₀= 1.96 mg/mL). The α -glucosidase assay revealed that the hexane extract exhibited the strongest carbohydrate inhibiting capacity and is a better inhibitor than the standard reference drug-acarbose. The computational studies also affirm the results observed in the in vitro α -glucosidase assay. Thus, the extracts of *G. lasiocarpa* may be considered a potential plant-sourced compound for treating type 2 diabetes mellitus. This is the first study on the anti-diabetic properties of *Grewia lasiocarpa* hexane, chloroform, and methanol extracts using in vitro and in silico models.

Keywords : *grewia lasiocarpa*, α -glucosidase inhibition, anti-diabetes, ADMET

Conference Title : ICMPHN 2022 : International Conference on Medicinal Plants and Holistic Nutrition

Conference Location : Los Angeles, United States

Conference Dates : October 27-28, 2022