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 phytocompounds 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 vitroα-glucosidaseassay. 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 antidiabetic 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

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