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PHYTOCHEMICAL SCREENING AND *IN-VITRO* ANTI DIABETIC PROPERTIES OF *Hemidesmus indicus* METHANOLIC ROOT EXTRACT

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Aim of this study was to evaluate the *in vitro* anti-diabetic properties of methanolic root extracts of *Hemidesmus indicus* using α- amylase and α- glucosidase inhibitory assayand to determine the phytochemical constitutes present. The experiment was carried out from February 2018 to June 2018. Initial screening for α -amylase and α-glucosidase for methanolic r extract was carried out at the concentration of 2000 ppm. Acarbose was used as a positive control. Partitioning was done using the non-polar to polar solvents such as hexane, dichloromethane and ethylacetate successively. Qualitative tests for constituents such as alkaloids, flavonoids, tannins, sapponins, steroids and terpenoids were identified and total phenolic content and total flavonoid content were quantitated. From the qualitative phytochemical analysis, constituents such as alkaloids, flavonoids, tannins, sapponins, steroids and terpenoids were identified in the methanolic crude extract of *Hemidesmus indicus* root. Total phenolic content and total flavonoid content were 675 ± 21.21 mg GAE/g and265.33 ± 2.82 mg CAT/g, respectively. Ethylacetate fraction of *Hemidesmus indicus* root exhibited very high inhibition percentage for α- amylase (78.3%) and α-glucosidase (97.15%) at 500 ppm, whereas final residue remaining after the extraction by the solvents showed around 58.07% inhibition for α- glucosidase. IC_{50} values of α-amylase and α-glucosidase inhibitory assay for ethyl acetate fraction were 36.87 ± 0.9 ppm and 8.52 ± 0.10 ppm, respectively. Final residue remaining after solvent extractions showed IC_{50} value of 18.55 ± 0.22 ppm for α- glucosidase inhibitory activity. Large amount of phenolic compounds were present in the methanolic crude extract of *Hemidesmus indicus* root. Ethylacetate fraction of methanolic extraction of *Hemidesmus indicus* effectively inhibits both α-amylase and α-glucosidase enzymes activity and the polar compounds in the root may be responsible for the anti-diabetic properties. The effect of the extract supported the traditional claim of the plant root for its anti-diabetic property.

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Keywords: α-amylase, α-glucosidase, inhibitors, diabetes, ethylacetate