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# α-amylase activity of isolated compounds from Hemidesmus indicus

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Medicinal plants are valuable natural resources and regarded as potentially safe drugs. The present study is designed to investigate the anti-hyperglycemic activity of *Hemidesmus indicus*. Ethanolic extracts of *Hemidesmus indicus* further fractionated with hexane, ethyl acetate, chloroform and water, were tested for their anti-hyperglycemic activity by α-amylase inhibitory assay. The ethanolic extract showed the maximum inhibition (76.60%) followed by water (68.71%) and ethylacetate (58.85%) in comparison to standard drug acarbose (80.34%) at the conc. of 160 µg/ml. The IC50 value of the ethanolic, water, and ethyl acetate have of 95.05 ± 0.49 µg/mL, 112.39 ± 0.68 µg/mL and 142.02 ± 0.59 µg/mL, respectively in comparison to $IC_{50}$ value of acarbose (88.28±0.94 µg/mL). β-sitosterol and lupeol were isolated from ethanolic fraction of H. indicus and was subjected to anti-hyperglycemic activity. The IC50 values of these compounds are 163.03±0.96 µg/mL and 56.73 ± 0.47 µg/mL respectively. To verify the results docking study of β-sitosterol and lupeol with mammalian alpha amylase is carried out on its active site. From the study it concluded that all the studied ligands form one H-bond interactions with the active site residues either Asp212 or Thr21. Hydroxyl hydrogen of β-sitosterol has one hydrogen bond with carbonyl oxygen of Thr21. The estimated free energy binding of β-sitosterol was found to be -9.97 kcal mol-1 with an estimated inhibition constant ($K_i$) of 560.96 nmol whereas the estimated free energy binding of lupeol was -12.71 kcal $mol^{-1}$ with an estimated inhibition constant ($K_i$) of 478.71 pmmol. The present study clearly showed that lupeol is more potent in comparison to β-sitosterol.

## Biography

Anjali Verma has completed her MSc from Government Medical College (Kumaun University) and pursuing PhD from Kumaun University, Nainital Uttarakhand India. She is the Research Scholar at Phytochemistry Division of CSIR-National Botanical Research Institute, Lucknow India. She has published two popular articles.

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