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Antidiabetic inhibitory potential and identification of bioactive compounds of *Carica papaya* leaf extract

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Objective and Aim: The aim of the research work was to characterize the methanolic extract of *C. papaya* and then carried out the anti-diabetic inhibitory potential of the extract against Aldose Reductase enzymes.

Materials and Methodology: The *C. papaya* leaves were harvested fresh and air dried for five days at room temperature and blended into powdered form using electric blender. It was subsequently subjected to extraction using analytical grade of methanol solvent. Enzymatic reaction assays were performed using standard recommended protocol with slight modifications and the extract was characterized using Gc-MS. Finally some of the identified compounds were screened for various degrees of drug characteristics using Online OSIRIS property explorer. Results: the IC₅₀ value ($1.22 \pm 0.63 \mu\text{g/mL}$) of ALR1 was better than the standard vaproic acid of IC₅₀ ($57.4 \pm 10 \mu\text{g/mL}$) and the IC₅₀ ($1.22+0.06 \mu\text{g/mL}$) of ALR2 of the methanolic extract was better than the sorbinil standard IC₅₀ ($3.10 \pm 0.20 \mu\text{g/mL}$). The promising inhibitory aldose reductase may be due to the compounds present in the methanolic extract and these compounds include; phytol, Oxalic acid, 6-ethyloct-3-yl isobutyl ester, 3-methyl-2-(2-oxopropyl)Furan, Carbonic acid, isobutyl undec-10-enyl ester, D-mannitol, 1 decylsulfonyl and 1H-Imidazole, 1(1-oxooctadecyl), these identified compounds possess different drug characteristics such as, solubility, mutagenic, irritability, H-bond acceptor and H-bond donor. Conclusion: The promising potent inhibitory activity of *C. papaya* showed that the plant leaves could be further researched into as alternative for resolving cataract eye problem associated with prolonged diabetes mellitus.