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## ABSTRACT

Diabetes mellitus is famous for its great economic burden all around the world. There is an extreme need to formulate economical treatment along with fewer side effects. This study describes the use of *Momordica charantia* extract as plant medicine, silver nanoparticles and zinc oxide nanoparticles as nano-medicines, individual as well as their effects in a combination as anti-hyperglycemic treatment. All the treatments present in this study were compared with commercially available standard drugs in the market. Therefore, mean reduction in glucose level noticed in individual treatment of *Momordica charantia* extract (500mg/kg) is  $75\% \pm 1.3$ . Another mean reduction in glucose level noticed in combine treatment of zinc oxide nanoparticles (3mg/kg) with combination of *Momordica charantia* extract (500mg/kg) is  $86\% \pm 2.0$ . Above treatments are more effective as compared to already available standard commercial drugs; Amaryl (3mg/kg) shows effectiveness of  $52\% \pm 2.4$  and Glucophage (500mg/kg) shows effectiveness of  $29\% \pm 2.1$ . Analysis of body weight changes in mice is also observed. Maximum reduction in body weight observed by zinc oxide nanoparticles (3mg/kg) is 1.60g. Body weight elevation in mice was noticed in a group labeled as positive control. An obtained result indicates that individual treatment of *Momordica charantia* extract and the combine treatment of zinc oxide nanoparticles and *Momordica charantia* extract is considered as a potent anti-hyperglycemic agent.