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Thiazolidine-2,4-dione Derivatives Bearing Indole Moiety: Design, Synthesis, Hypoglycaemic activity and Molecular Docking Studies

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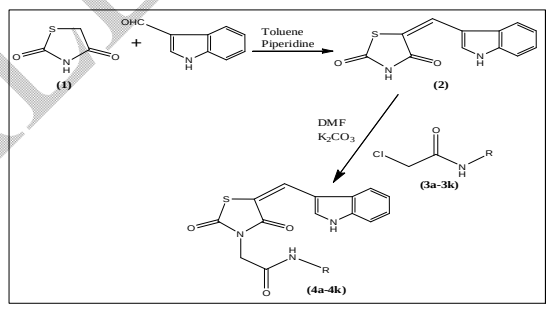
ABSTRACT

A series of novel thiazolidine-2,4-dione derivatives having N-aryl acetamide appendage at 3rd position and indolyl methylene appendage at 5th position was synthesized by using appropriate procedures. The synthesized compounds were characterized physically, FT-IR, ^{1}H-NMR, ^{13}C-NMR and mass spectral analysis. The newly synthesized compounds were evaluated for their hypoglycemic activity by means of tail tipping method in Alloxan induced Wister albino rats of both sexes. Compounds 4a and 4b showed promising hypoglycaemic activity in both acute studies as well as in chronic study when compared with the standard drug Rosiglitazone. Molecular docking studies were carried out using AutoDock software and revealed that compounds 4a and 4b exhibit significant binding interaction with PPARγ receptor compared with the standard ligand Rosiglitazone.

Graphical Abstract



Keywords: Thiazolidine-2,4-dione derivatives, Conventional and microwave methods, *In vivo* hypoglycemic activity, Molecular docking studies.