Synthesis, in-vivo anti-diabetic & anticancer activities and molecular modelling studies of tetrahydrobenzo[d]thiazole tethered nicotinohydrazide derivatives

ABSTRACT

A series of thirty new thiazole-pyridine derivatives were synthesized by reaction of 4,4,7,7-tetra-methyl-4,5,6,7-tetrahydrobenzo[d]thiazol-2-amine with 6-chloronicotinate followed by condensing with benzaldehydes and screened for their anti-diabetic activity by in vivo housing Swiss albino mice. All synthesized compounds resulted in reducing the glucose level when compared with reference standard drug glibenclamide. In specific, compound 7 exhibited significant activity in terms of fasting blood glucose level reduction. In addition, the in-silico binding studies of the potential compounds 11f and 11g with human PPAR-γ protein complexed with Retinoid X Receptor (RXR) alpha Nuclear Receptor showed good interactions when compared to the standard drug Rosiglitazone. The newly synthesized drugs may be potential anti-diabetic drugs with possible specific actions.