

10TH ASIA-PACIFIC PHARMA CONGRESS

May 08-10, 2017 Singapore

Synthesis, characterization and pharmacological evaluation of hybrid urea/thiourea derivative as a potential antidiabetic activity**Tanmoy Guria, Puspita Roy and Tapan kumar Maity**
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The prevalence of diabetes is rising all over the world due to population growth, aging, urbanization and an increase in obesity and physical inactivity. Type 2 *Diabetes mellitus* (T2DM) presents a major challenge to healthcare system around the world. Urea and thiourea derivatives possess many promising biological activities. Here, urea/thiourea derivatives have been synthesized and screened for the antidiabetic activity. This study involves the synthesis of a series of hybrid urea/thiourea derivatives (5a-5h) containing chalcone moiety. The synthesized compounds were characterized by FT-IR, ¹H NMR, mass spectroscopy and evaluated for their both *in vitro* and *in vivo* antidiabetic activity. The *in vitro* antidiabetic activity was done by α -glucosidase inhibitory activity of synthesized compounds. Acute toxicity study of the synthesized compounds was conducted by OECD guidelines, from which dose levels were calculated. The *in vivo* antidiabetic activity was performed on streptozotocin induced diabetic Swiss albino rats. The blood glucose level, different enzymatic studies (SGPT, SGOT, ALT) and lipid profile (HDL, LDL, Cholesterol) of the studied animal were estimated. The results indicated that the hybrid urea/thiourea derivatives displayed promising antidiabetic activity. Among the series, compound 5a showed potent α -glucosidase inhibitory activity when compared to the standard drug Acarbose. In *in vivo* study, the compound 5a was found more effective when compared to the standard drug Metformin. It may be concluded that hybrid urea/thiourea derivatives will be a new class of antidiabetic compound in future.

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