conferenceseries.com

Global Summit on ENDOCRINOLOGY

August 22-23, 2022 | Webinar

Pioglitazone synthetic analogue ameliorates streptozotocin-induced diabetes mellitus through modulation of ACE 2/Angiotensin 1–7 via PI3K/AKT/mTOR signaling pathway

Yasmin M. Ahmed

Department of Pharmacology and Toxicology, Egypt

The renin angiotensin aldosterone system has a localized key regulatory action, especially in liver and body circulation. Furthermore, it accomplishes a significant role in the downregulation of the PI3K/AKT/mTOR signaling pathway that is involved in type II diabetes mellitus pathogenesis. The current study aimed to evaluate the effect of a synthetic pioglitazone analogue (benzenesulfonamide derivative) compared to the standard pioglitazone hypoglycemic drug on enhancing liver insulin sensitivity via ACE 2/Ang (1–7)/PI3K/AKT/mTOR in experimental STZ-induced diabetes. After the model was established, rats were distributed into the normal control group, diabetic group, pioglitazone group (20 mg/kg), and a benzenesulfonamide derivative group (20 mg/kg), with the last 2 groups receiving oral treatment for 14 consecutive days. Our results suggested enhancing liver insulin sensitivity against the ACE2/Ang (1–7)/PI3K/AKT/mTOR pathway. Moreover, the synthetic compound produced a reduction in blood glucose levels, restored hyperinsulinemia back to normal, and enhanced liver glycogen deposition. In addition, it up regulated the ACE2/Ang (1-7)/PI3K/AKT/mTOR signaling pathway via increasing insulin receptor substrate 1 and 2 sensitivity to insulin, while it increased glucose transporter 2 expression in the rat pancreas. The study findings imply that the hypoglycemic effect of the benzenesulfonamide derivative is due to enhancing liver sensitivity to regulate blood glucose level via the ACE2/Ang (1–7)/PI3K/AKT/mTOR pathway.

Biography

Yasmin Moustafa has her expertise in targeting creating a new and effective pathway to treat a pathological condition or comorbidity in order to my passion in improving the health and wellbeing. He have built this target after years of experience in research, evaluation, teaching and administration in education institutions.