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Insulin resistance reversibility and anti-diabetic potential of isoalantolactone analogues via partial PPAR- γ pathway

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Worldwide occurrence of insulin resistance is around 20% of human population and it is primarily linked to type-2 diabetes. Insulin resistance is associated with blunted response of insulin in peripheral tissues like skeletal muscle, adipose tissue and liver. Therapeutic approaches with natural product lay an excellent foundation for search of effective, relatively safe and inexpensive treatment options for diabetes mellitus and associated metabolic disorders in search of novel compound to ameliorate insulin resistance. Peroxisome proliferator-activated receptors (PPAR) are members of the nuclear hormone receptor super-family of ligand-activated transcription factors. PPAR- γ is the key regulator of lipid metabolism and energy balance implicated in the development of insulin resistance. The identification of putative natural and synthetic ligands and activators of PPAR- γ has helped to unravel the molecular basis of its function, including molecular details regarding ligand binding, conformational changes of the receptor and cofactor binding leading to the emergence of the concept of selective PPAR- γ modulators. No satisfactory therapeutic option is currently available to treat patients with nephropathy except for fewer agents like angiotensin converting enzyme inhibitors, angiotensin AT1 receptor blockers and few antioxidants, which have been shown to improve the function of diabetic kidney to some extent. Thus, tremendous efforts are being made to explore promising therapeutic interventions to treat diabetic nephropathy. This review discussed various presently employed and recently developed pharmacological interventions to treat diabetic nephropathy and to improve the function of diabetic kidney. In addition, the recently identified potential target sites involved in the pathogenesis of diabetic nephropathy have been delineated.

Biography

Raj Kirandeep has completed his Bachelor's in Pharmacy from Rayat Bahra Institute of Pharmacy Hoshiarpur, India. He is a registered Pharmacist. He has worked as a trainee in Glenmark Pharmaceuticals Ltd. Baddi in QA Department. He has a publication on anti-anxiety activity of *Eriobotrya Japonica* leaf extracts in *Research Journal of Pharmaceutical, Biological and Chemical Sciences* and poster presentation on "Nitroglycerine Transdermal Patch, a Novel Approach" in National Seminar on Recent Advances in Oral Controlled Drug Delivery System. He has attended a national seminar on "Recent advances in oral controlled drug delivery system", "Opportunities & challenges in clinical research and pharmacovigilance". Presently, he is working as a Jr. Pharmacist from May 2015 in Dayanand Medical College & Hospital to till date.

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