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Anthranilic acid derivatives as novel antiglycation and antidiabetic agents as possible leads against diabetes and associated complications

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Diabetes mellitus is a chronic heterogeneous disorder. It is commonly presented with elevated levels of blood glucose and glucose intolerance, as a consequence of insulin deficiency and defective insulin action, or both. Currently, diabetes is affecting 415 million people globally. By 2040 this figure will rise to 642 million, as reported by the International Diabetes Federation. According to the WHO, diabetes is the third highest risk factor for premature death, after hypertension and cigarette smoking. In high-income countries, it is estimated that approx. 87-91% of all people living with diabetes have type 2 diabetes, 7-12% have type 1 diabetes and 1-3% have other types of diabetes. Currently available oral antidiabetic drugs include metformin and sulfonylureas. They play a pivotal role in the treatment of type 2 diabetic patients. Despite intensive attempts towards long-term management of type 2 diabetes, maintaining near euglycemic condition in these patients remains a major challenge. Recently, the molecules based on anthranilic acid scaffold have gained much attention in drug discovery and development. Anthranilic acid and its derivatives are constituents of many bioactive molecules. Both experimental and preclinical studies have explained the medicinal properties of anthranilic acid derivatives, including matrix metalloproteinase inhibition, anticancer, anti-inflammatory, antiglycation and analgesic activities. Our research group currently established that anthranilic acid derivative posses anti-diabetic effects, improved blood glucose levels and enhance insulinotropic action in diabetes animal model. This novel entity protects islet beta-cells, at least partly, via decreasing the intracellular reactive oxygen species (ROS) production.

Biography

Humera Jahan received her PhD in molecular medicine from Dr. Panjwani Center for Molecular Medicine and Drug Research. She has a unique distinction of being the first graduate of the PCMD, inducted in the faculty of the center. Her research interests include studies of the mechanism of vascular complications of diabetes, with special emphasis on the glycation of collagens and lipoproteins and RAGE-NF-kB nexus. Her main objective is to develop novel therapies for the prevention and treatment of chronic complications associated with diabetes. She has 10 publications in internationly repueted journals, along with 03 US patents.

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