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Attenuation of diabetic nephropathy by natural products

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Abstract

A remarkable worldwide increase in the number of patients with diabetes has been reported. Diabetic nephropathy is one of the microvascular complications of diabetes which may lead to end stage renal disease (ESRD). Current therapy of diabetic nephropathy mainly focuses on strict control of glucose and blood pressure. But these strategies provide inadequate protection against renal progression. So there is unmet need for newer therapeutic agents that have potential to affect primary mechanisms contributing to the pathogenesis of diabetic nephropathy. Oxidative stress shows marked increase in diabetes which plays key role in the pathogenesis of diabetic nephropathy. Reactive oxygen species (ROS) can damage cellular macromolecules and act as proapoptotic agents. There are sufficient scientific reports indicating that advanced glycation end products (AGEs) are important pathogenetic mediators of almost all diabetes complications. Inhibition of oxidative stress and AGEs ameliorates the manifestations associated with diabetic nephropathy. Phenolic phytochemicals are associated with direct antioxidant activity which counters the negative effects of ROS. These compounds have reported to inhibit AGEs also. Based on these facts, effect of natural products with phenolic nature were tested in streptozotocin (STZ) induced diabetic nephropathy. After 4 weeks of STZ administration, the animals were treated with phenolic natural products for 4 weeks. Different biochemical parameters like glucose, blood urea nitrogen and creatinine were assessed. At the end of the treatment, kidneys were subjected to oxidative stress assessment and histopathology. Results indicated significant improvement in biochemical parameters, significant reduction in oxidative stress and histopatholoical changes in kidneys.

Biography

His research area of interest is phytopharmacology focusing on diabetes, diabetic complications, inflammation. He is also involved in research related to toxicity and standardization of herbal drugs. He has published 20 research papers in journals of repute. He has authored 4 books and two book chapters. He is involved in research projects funded by Govt. of India, and industries. He is listed Member of MARQUIS Who's Who in the World 2012, USA. He is recipient of INSPIRE Faculty award 2012 from Department of Science & Technology (DST), Govt. of India under and "Sir Isaac Newton Scientific Award of Excellence For 2012" by the American Biographical Institute. He is reviewer for various scientific journals.