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Diabeto-protective role of natural plants: Exploring the alternative

Background: Diabetes is a multi-system metabolic disease with varied clinical presentations. Free radical injury is an important aspect of tissue injury in metabolic diseases. Free radicals have a wide spectrum of tissue damage and can be targeted effectively by secondary plant metabolites. This experimental study explores the usefulness of secondary metabolites from two natural plants, Albizzia lebbek and Syzygium cumini, for their possible antioxidant and diabeto-protective properties.

Methods: An experimental study was conducted in controlled experimental animals (rats) beginning with the exposure to Streptozotocin (STZ), for generation of free radicals. This initiated lipid peroxidation which was documented with subsequent change in the serum levels of malondialdehyde. The overall effect of STZ in relation to change in serum glucose and lipids level, body weight and antioxidant parameters were also measured. After co-administered with aqueous methanolic extract of natural plants, the protective role of the plant products against the free radicals was noted after. Finally hepatic histopathological studies were conducted to document the effect of the experiment.

Results: There were major reductions in the levels of endogenous antioxidant enzymes like superoxide dismutase, catalase and reduced glutathione after 30 days of experiment with STZ, suggesting the generation of free radicals. The co-administration of aqueous methanolic extract from natural plants significantly increased these antioxidant enzymes and reduced the elevated serum levels of malondialdehyde. There was also reduction in the blood sugar and lipids level, and decrease in body weight in contrast to STZ indicating the diabeto-protective effect. The histopathological evidences consolidated the findings by showing prevention of damage to the ultrastructure of liver rather than regeneration.

Conclusion: The established diabeto-protective actions of various extracts of natural plants in experimental rats widen the scope for further investigations in the field of research. It is also necessary to isolate and characterize the active chemical constituent of this plant extracts and efforts should be taken to establish such isolates as potential drug in clinical practice.

Biography

M V Raghavendra Rao has worked as a Professor of Microbiology, Parasitology, Immunology and Epidemiology in many universities, many medical colleges in India, China, Nepal, Libya, and Philippines. Currently, he is working as Professor of Microbiology, Parasitology, Immunology and Dean (Student Affairs) at Avalon University School of Medicine, Curacao, Netherland Antilles. He has more than 42 years of teaching and research experience. He has supervised 3 students for PhD, 4 students for MPhil, 4 students for pre MPhil degrees. He has authored 18 text books. He has presented 8 full length papers exclusively during 2014 to 2015 in different international journals. In 2016, he has published two full length papers in international journals.

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