

NATURAL INTERVENTIONS FOR DIABETIC OXIDATIVE STRESS: A STUDY ON THE THERAPEUTIC BENEFITS OF A NEW PHYTOCOLLECTION

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Actuality and relevance: Chronic hyperglycemia in diabetes mellitus often leads to oxidative stress, contributing to the pathogenesis of long-term complications. Antioxidant therapies have been recognized as a potential strategy to counteract oxidative damage in diabetic patients. Although several synthetic antioxidants are in use, they may carry side effects. Given the rich biodiversity, exploring local natural resources in the republic for potential antioxidants can be of considerable significance.

Aim of this work: To evaluate the antioxidant potential of the new phytocollection and its potential effect on hyperglycemia-induced oxidative stress in a diabetic animal model.

Materials and methods used: Diabetes was induced in 40 rats using streptozotocin. Post-induction, the rats were divided into four groups: control (distilled water), standard antioxidant drug-treated, phytocollection low dose (50 mg/kg), and phytocollection high dose (100 mg/kg). Over four weeks, oxidative stress markers, including malondialdehyde (MDA), superoxide dismutase (SOD), and catalase (CAT) activities, were assessed in serum. Furthermore, the glucose tolerance test was performed to assess any improvement in glucose metabolism.

Results: Diabetic rats exhibited elevated MDA levels, signifying increased lipid peroxidation, and decreased SOD and CAT activities, indicating compromised antioxidant defense. Both doses of the phytocollection significantly attenuated these changes, with the higher dose being more effective. In particular, MDA levels were notably decreased, while SOD and CAT activities were enhanced closer to normal values. Additionally, rats treated with the phytocollection showed improvement in glucose tolerance compared to the control group.

Conclusion: The new phytocollection exhibits notable antioxidant properties, suggesting its potential to mitigate hyperglycemia-induced oxidative stress. Additionally, its positive impact on glucose metabolism indicates a multifaceted therapeutic potential in diabetes management.

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