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Antihyperglycemic Potential of Chrysin and Diosmin alone or in Combination against Streptozotocin-Induced Hyperglycemia in Rats: Anti-Inflammatory and Antioxidant Mechanisms

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Abstract : Background: Diabetes is a metabolic disease that affects a wide range of people worldwide and results in serious complications. Streptozotocin (STZ) causes selective cytotoxicity in the pancreatic β-cell, and it has been extensively used to induce diabetes mellitus in rats. The present study investigated the effects of diosmin and chrysin alone or in combination with each other on glucose level and on liver in STZ diabetic rats. Methods: In this study, rats were divided into six experimental groups (normal, untreated STZ-diabetic (60 mg/kg B.W., IP), treated STZ-diabetic with glycazide (10 mg/kg B.W, oral), treated STZ-diabetic with diosmin (100 mg/kg B. W., oral), treated STZ-diabetic with chrysin (80 mg/kg B.W., oral), treated STZ-diabetic with diosmin (50 mg/kg B.W, oral) + chrysin (40 mg/kg B.W., oral). After 2 weeks blood samples were withdrawn and glucose was measured. Animals were anaesthetized with an intraperitoneal injection of sodium pentobarbital (60 mg/kg), and sacrificed for dissecting liver. Results: Throughout the experimental period, all treatments significantly ($P<0.05$) lowered serum glucose, AST, ALT, triglyceride, cholesterol, IL-6, TNF-α and IL-1β. Moreover, the treated diabetic rats showed higher levels of reduced glutathione ($P<0.05$) in the liver compared to the diabetic control rats and inhibited diabetes-induced elevation in the levels of malondialdehyde in liver. The results of this study clearly demonstrated that diosmin and chrysin possess several treatment-oriented properties, including the control of hyperglycemia, antioxidant effects and anti-inflammatory effects. Conclusion: Considering these observations, it appears that diosmin and chrysin may be a useful supplement to delay the developmentof diabetes and its complications.

Keywords : diabetes, streptozocin, chrysin, rat, diosmin, cytokines
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