

The Effect of *Costus igneus* Extract on Learning and Memory in Normal and Diabetic Rats

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Abstract : Background: Moderate impairment of learning and memory has been observed in both type 1 and 2 diabetes mellitus in humans and experimental animals. A Change in glucose utilization and oxidative stress that occur in diabetes are considered the main reasons for cognitive dysfunction. Objective: *Costus igneus* (CI) which is known to possess hypoglycemic activity was evaluated in this study for its effect on learning and memory in normal and diabetic rats. Methods: Wistar rats were divided into control, CI-alcoholic extract treated normal (250 and 500mg/kg), diabetic control and CI-treated diabetic groups. CI treatment was continued for 4 weeks. For induction of diabetes, a single dose of streptozotocin was injected (30 mg/kg i.p). Entrance latency and time spent in the dark room during acquisition and at 24 and 48h after an aversive shock in a passive avoidance model was used as an index of learning and memory. Glutathione and malondialdehyde levels in brain and blood glucose were measured. Data was analysed using ANOVA. Results: During the three trials in exploration test, the diabetic control rats exhibited no significant change in entrance latency or in the total time spent in the dark compartment. During retention testing, the entrance latency of the diabetic treated groups was two times less at 24h and three times less at 48h after aversive stimulus as compared to diabetic rats. The normal drug-treated rats showed similar behaviour as the saline control. Treatment with CI significantly reduced the raised blood sugar and MDA levels of diabetic rats. Conclusion: *Costus igneus* prevented the cognitive dysfunction in diabetic rats which can be attributed to its antioxidant and antihyperglycemic activities.

Keywords : *Costus igneus*, diabetes, learning and memory, cognitive dysfunction

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