

Pharmacological Evaluation of *Colocacia esculanta* Leaves on Diabetic Neuropathic pain by using Animal model

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Abstract: Diabetes is a metabolic disorder characterized by chronic hyperglycaemia with disturbances of carbohydrate, fat and protein metabolism resulting from defects in insulin secretion and leading to various complications, including diabetic neuropathy (DN), characterized by nerve damage and neuropathic pain. The current study evaluated the effect of Methanolic Extract of *Colocacia esculanta* (MECE) leaves on diabetic neuropathic pain in streptozotocin (STZ)-induced diabetic rats. Diabetes was induced in Male Wistar rats via STZ injection (60 mg/kg). Diabetic neuropathy was confirmed after STZ induction in negative control group assessing thermal hyperalgesia using the tail flick test and motor coordination deficits using the rota rod apparatus and Swimming Endurance Test (SET) model. Diabetic rats were then treated orally with MECE at low (150 mg/kg) and high (300 mg/kg) doses, and Metformin (25 mg/kg) as a standard control. The effects of MECE on pain threshold (tail flick latency) and motor coordination (Swimming Endurance Test (SET) and rota rod falling time) were evaluated. Phytochemical screening of (MECE) revealed the presence of alkaloids, Flavonoids, carbohydrates, Steroid, tannins, proteins. The results demonstrated that STZ-induced diabetic rats exhibited significant thermal hyperalgesia and impaired motor coordination compared to normal control rats. Treatment with both low and high doses of MECE significantly improved tail flick latency, Swimming activity and rota rod falling time in diabetic rats compared to the Negative control group. These findings suggest that MECE possesses potential analgesic and neuroprotective effects in the context of diabetic neuropathic pain in rats.

Keywords: *Colocacia esculanta*, Diabetic Neuropathic Pain, Streptozotocin, Tail Flick Test, Swimming Endurance Test (SET), Rota Rod Test

