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Efficacy of *Gutenbergia nigritana* on manganism induced adult male mice

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Introduction: Manganese is an important element in the biological system. Excessive exposure may lead to a neurological disorder known as manganism. Hence, checking the ameliorative effects of *Gutenbergia nigritana* on the neuronal integrity of the cerebellum in motor deficit seen in manganism.

Methodology: Fifty adult male mice weighing between 25-30g were divided into five groups (n=10). Animals were given Manganese only (Group A), Manganese first with later treatment with *G. nigritana* (Group B), concurrent treatment with manganese and *G. nigritana* (Group C), *G. nigritana* alone (group D) and normal saline (group E). Manganese treatment was for seven days administered intraperitoneally at the dose of 40mg/kg bw, while *G. nigritana* treatment was for 14 days and administered orally. Motor coordination was assessed in the animals using rotarod and parallel bar test. Animals were later sacrificed by chloroform inhalation, followed by transcardiac perfusion fixation; the region of cerebellum were dissected out, and fixed in 10% formal calcium for 72 hours, then processed for H&E stain and CFV. Data were analyzed using ANOVA with Newman Post Hoc test when ANOVA shows significant at $p < 0.05$.

Results & Conclusion: Behaviorally, manganese treated group shows decreased motor activity on the Rota-rod, increased time to turn and total time during parallel bar test was noticed. $MnCl_2$ alter the molecular, Purkinje and granular layer of the cerebellum. Indistinct Nissl body was also observed in manganese treated group. *Gutenbergia nigritana* shows ameliorative effect on the neurons. Manganese toxicity induces motor deficit with neurodegeneration, while *Gutenbergia nigritana* affect the motor activities of the animals.

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