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Original Paper

MO11 AND MS06 AMELIORATED CADMIUM CHLORIDE-INDUCED NEURO-DEGENERATION AND ALTERATIONS OF DOPAMINE, GLUTAMATE AND MYELIN BASIC PROTEIN EXPRESSIONS IN RATS

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Abstract

This study evaluated the neuro-protective potentials of MO11 (isolated from Moringa oleifera leaves) and MS06 (isolated from Musa sapientum suckers) in Cadmium Chloride ($CdCl_2$)-induced neurotoxicity in rat cerebrum. Twenty-eight adult male wistar rats were randomly divided into 7 groups (n= 4). Group 1 received physiological saline. Groups 2-4 and 7 received single 1.5 mg/Kg bodyweight of $CdCl_2$ (i.p.) (Day 1). Groups 3, 4 and 7 were post-treated with 15 mg/Kg bodyweight of MO11, 15 mg/Kg bodyweight of MO11 + 7 mg/Kg bodyweight of MS06 and 3.35 mg/Kg bodyweight of Doxorubicin respectively (Days 1-17). Groups 5 and 6 received only MO11 and Olive Oil (vehicle) respectively (Days 1-17). Tissue-immunochemical assays of Dopamine, Glutamate and Myelin Basic Protein (MBP) (ELISA technique) and Total Protein assays (spectrophotometric technique) in cerebral homogenates of rats were conducted. Statistical analyses showed upregulations of Dopamine and Glutamate in Groups 3, 4 and 7 compared with Group 2. Furthermore, results showed significant MBP-downregulations in Groups 3 and 4, but non-significant MBP-downregulation in Group 7, compared with Group 2. Total Protein levels were normal in Groups 1-7. MO11 and MS06 provided better neuro-protective and re-myelination potentials compared with Doxorubicin. Overall, MO11 and MS06 possess neuro-protective, neuro-regenerative and re-myelination potentials.

Keywords: *cadmium, Moringa oleifera, Musa sapientum, neuro-protection, neuro-regeneration, neuro-toxicity*

Introduction

Cadmium (Cd) is one of the 10 chemicals of concern for human health [*Andjelkovic et al., 2019; Akinlolu et al., 2022*]. Human Cd-exposure was linked with nervous system dysfunctions resulting in symptoms such as impaired learning capacity, headache and vertigo, decreased cognitive functions, olfactory dysfunction, poor vasomotor functioning, parkinsonian-like symptoms, peripheral neuropathy and poor equilibrium and balance co-ordination. Cd-exposure is equally an etiological

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