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ANTI-TOXIC PRINCIPLES FROM *MUSA SAPIENTUM* AND *MORINGA OLEIFERA* AMELIORATED SKIN HISTO-PATHOLOGY, DECREASED LIPID PEROXIDATION AND PROMOTED MELATONIN/TNF-ALPHA/ P53-MEDIATED APOPTOSIS IN CADMIUM CHLORIDE-INDUCED CARCINOGENESIS IN RATS

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ABSTRACT

This study evaluated anticancer potentials of Musa sapientum (MS) and Moringa oleifera (MO) in cadmium chloride ($CdCl_2$)-induced skin and liver carcinogenesis. Musa sapientum fraction-1 (MSF1) and Moringa oleifera fraction-6 (MOF6) were extracted from MS suckers and MO leaves, respectively, using column-chromatography methods. Forty-five adult male rats were randomly divided into 11 groups (n = 5). Cancer-induction was via single intraperitoneal administration of 1.25 mg/kg $CdCl_2$. Groups 1 and 2 received physiological saline and $CdCl_2$dose, respectively. Groups 3–5 received $CdCl_2$dose on day 1 but were post-treated on days 15–56 with 15 mg/kg MOF6, 30 mg/kg MOF6 and 10 mg/kg MSF1, respectively. Group 6 received $CdCl_2$dose on day 1 and were post-treated on days 15–28 with doxorubicin + cisplatin doses. Groups 7–9 received MOF6 dose and MSF1 dose, respectively (days 1–56). Groups 10 and 11 received $CdCl_2$dose on day 1 and were post-treated with 30 mg/kg MOF6 and 10 mg/kg MSF1, respectively (days 1–56). Doxorubicin and extracts doses were administered orally. Skin histo-pathology (haematoxylin and eosin), sera melatonin and tumour necrosis factor-alpha (TNFα) (enzyme linked immunosorbent

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assays [ELISA]) levels were evaluated. Malondialdehyde (thiobarbituric acid assay) and p53 (ELISA) levels were evaluated in liver homogenates. Data were statistically analysed using ANOVA at $p \leq 0.05$. Results showed skin histo-alterations in Group 2, compared with normal skin histology in Groups 1 and 3–11. Statistical analyses showed significant downregulation of p53, non-significant downregulations of malondialdehyde and TNFα, and non-significant upregulation of melatonin in Groups 3–11 compared with Group 2. Overall, post-treatments with MOF6 and MSF1 exhibited possible anticancer potentials of these plants extracts via degrees of amelioration of $CdCl_2$-induced skin histo-pathology and carcinogenesis.

Keywords: Cadmium, Melatonin, *Musa sapientum*, *Moringa oleifera*, p53, TNFα