

CHROMATOGRAPHY-SPECTROSCOPIC ISOLATED MO11 (*MORINGA OLEIFERA*) AND MS06 (*MUSA SAPIENTUM*) POSITIVELY IMMUNOMODULATED ACE2 LEVELS IN BLOOD, KIDNEY AND LIVER OF RATS

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ABSTRACT

Moringa oleifera (MO) and *Musa sapientum* (MS) are ethno-medicinal plants, while cadmium is a carcinogen. SARS-CoV-2 binds to ACE2 for host's cell invasion and infection. This study evaluated the effects of MO11 (isolated from MO leaves) and MS06 (isolated from MS suckers) on ACE2 levels in cadmium chloride (CdCl₂)-induced toxicity in rats. Twenty-four adult male Wistar rats were randomly divided into six groups (n = 4). Group 1 was control. Groups 2–4 received single 1.5 mg/kg bodyweight of CdCl₂ (i.p.) (Day 1). Groups 3 and 4 were post-treated with MO11 and MO11 + MS06 doses, respectively (Days 1–17). Groups 5 and 6 received only MO11 and olive oil (vehicle), respectively (Days 1–17). MO leaves and MS suckers were subjected to bioassay-guided fractionation and isolation procedures using chromatography and spectroscopic techniques. ACE2 levels (ELISA) were evaluated in blood, kidney and liver of rats. MO11 and MS06 were the most active antioxidant and antimicrobial compounds isolated from MO leaves and MS suckers, respectively. Liquid chromatography-mass spectrometry showed presence of therapeutic compounds and amino-acids in MO11 and MS06, which are part of 14 shared amino-acids used by SARS-CoV and SARS-CoV-2 for ACE2-binding. Post-treatments of CdCl₂-exposure with MO11 and MS06 showed decreased ACE2 levels in Group 4 (20.63 ± 4.33 ng/mL and 16.11 ± 0.49 ng/mL in blood and kidney samples, respectively), compared with Group 2 (39.39 ± 3.15 ng/mL and 85.39 ± 3.10 ng/mL in blood and kidney samples, respectively). In conclusion, MO11 and MS06 possess significant ethno-medicinal potentials, may compete with SARS-CoV-2 for ACE2 binding, and are recommended for evaluations as anti-SARS-CoV-2 agents.

Keywords: *Moringa oleifera*, *Musa sapientum*, Chromatography-spectroscopic techniques, Immuno-modulation, ACE2

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