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**ALIEN INVASIVE PLANT *PROSOPIS JULIFLORA*: ALKALOID-MONTMORILLONITE NANOCOMPOSITES AND ANTIOXIDANT AND CYTOTOXIC PROPERTIES**

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Alien invasive plant *Prosopis juliflora* (Sw.) Dc. contains bioactive alkaloids. Alkaloids can be trapped into interlayer nanospaces (1-3 nm) present in cation-exchanged montmorillonite clays. The trapping of alkaloids present in *P. juliflora* extracts, by cation-(H<sup>+</sup> and Al<sup>3+</sup>)-exchanged montmorillonite (MMT) clays, was investigated and the releasing of alkaloids from the composites was studied. Antioxidant properties of extracts were determined using 2,2-diphenyl-1,1-picrylhydrazyl (DPPH) assay and cytotoxic properties of extracts and their clay composites using brine shrimp lethality assay (BSLA). Powdered root-bark, leaf and stem-bark were separately extracted into dichloromethane: methanol (1:1), for 48 h, using a bottle extractor. The alkaloid fractions of leaf, root-bark and stem-bark extracts were isolated by acid base method and their yields were 10.2%, 9.4% and 4.1%, respectively. Each extract was separately stirred with Al<sup>3+</sup>-MMT and H<sup>+</sup>-MMT clays for 24 h and the clays trapped alkaloids (84-96%) (as determined by the ion-pair formation method) from the extracts to furnish the corresponding alkaloid-clay composites. The clays were characterized by FT-IR and XRD methods. Alkaloid-Al<sup>3+</sup>-MMT and alkaloid-H<sup>+</sup>-MMT, derived from the root-bark extract, slowly released 98% and 78% of the trapped alkaloids at pH 1.2 (gastric), respectively, during 6 h; the corresponding values at pH 7.4 (intestinal) were 48% and 21%, respectively. In the DPPH assay, the IC<sub>50</sub> values of leaf, stem-bark and root-bark extracts and the alkaloid fraction of the root-bark extract were 119.7, 23.4, 21.3 and 56.5 mg dm<sup>-3</sup>, respectively; the root-bark extract appeared to contain potent non-alkaloid antioxidant principles. In the BSLA, the root-bark extract, Al<sup>3+</sup>-MMT, H<sup>+</sup>-MMT and the clay composites appeared non-toxic (LC<sub>50</sub> 7080-2248 mg dm<sup>-3</sup>). The moderately toxic (LC<sub>50</sub> 205 mg dm<sup>-3</sup>) alkaloid fraction of the root-bark extract was successfully intercalated directly from the extract into H<sup>+</sup>-MMT and Al<sup>3+</sup>-MMT clays to furnish non-toxic clay composites, which slowly released trapped alkaloids at gastric and intestinal pH values.

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