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Evaluation of bioactivities of extracts obtained from the *Portulaca quadrifida* plant

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Melanin is a natural skin pigment, which is responsible for the colour of the skin, hair and eye in people. Tyrosinase is the rate limiting key enzyme, which controls the production of melanin at the first step of melanin production. Tyrosinase inhibitors reduce the tyrosinase enzyme from over stimulation. In this research, one sample of whole dried plant of *Portulaca quadrifida* was sequentially extracted into hexane, ethyl acetate, methanol solvents and another sample was extracted using water as the solvent. Then the total phenolic content, total flavonoid content, antioxidant activity and tyrosinase inhibitory potential were evaluated for all four extracts. These bioactivities were chosen in this study to find out an existence of a correlation between them since evaluated bioactivities are related to phenolics. Folin–ciocalteu reagent method was used to determine the total phenolic content where methanol and water extracts showed the highest amount of total phenolic content as 15.28 GAE g⁻¹ and 11.37 GAE g⁻¹, respectively. To determine the total flavonoid content AlCl₃ colorimetric method was used where methanol and water extracts showed 44.1 mg g⁻¹ and 18.5 mg g⁻¹ amount of total flavonoid content. Antioxidant activity was determined using DPPH method. The methanol and water extracts showed high DPPH radical scavenging activity, 53.19± 0.06% and 45.17± 0.05%, respectively at a concentration of 0.4 mg/mL. Then the tyrosinase inhibitory potential of all four extracts were determined using anti tyrosinase assay. The methanol, water and ethyl acetate extracts showed 51.46±0.06%, 36.95±0.074% and 51.11±0.08% inhibitory effects against mushroom tyrosinase, at a concentration of 4 mg/ml, respectively. According to the obtained results, the methanolic extract of *Portulaca quadrifida* plant has displayed a specific correlation between the four bioactivities becoming the potent extract for all evaluated bioactivities. Therefore, the methanol extract of *Portulaca quadrifida* could be further studied to develop and modify agents related to the aforesaid bioactivities.

Key words: Antioxidant, inhibition, methanolic, *Portulaca quadrifida*, tyrosinase

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