

Investigation into the Phytochemistry and Biological Activities of Medicinal Plants Used in Algerian Folk Medicine: Potential Use in Human Medicine

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Abstract : Medicinal plants are an important source for the discovery of potential new substances for use in medicine and food. Pistacia lentiscus, Fraxinus angustifolia and Clematis flammula, plants growing in the Mediterranean basin, are widely used in traditional medicine. Therefore, the present study was designed to investigate their antioxidant, anti-inflammatory, antidiabetic, anti-mutagenic/genotoxic and neuroprotective potential and identification of active compounds using appropriate methodology. Plant extracts and fractions exhibited high scavenging capacity against known radicals, enhanced superoxide dismutase and catalase activities and restored blood glucose levels, in vivo, to normal values, in agreement with the in vitro enzymatic inhibition data, through inhibition of amylase and glucosidase activities. Administration of Pistacia lentiscus extracts significantly decreased carrageenan-induced mice paw oedema and reduced effectively IL-1 β levels in cell culture, whereas Fraxinus angustifolia extracts showed good healing capacity against wounds when applied topically on rabbits. Pistacia lentiscus and Fraxinus angustifolia extracts showed good neuro-protection and restored cognitive functions in mice, while Clematis flammula extracts showed potent anti-ulcerogenic activity associated to a promising anti-mutagenic/genotoxic activity. HPLC-MS and NMR analyses allowed the identification and structural elucidation of several known and new anthocyanins, flavonols and flavanols. Therefore, Pistacia lentiscus, Fraxinus angustifolia and Clematis flammula could be used in palliative treatments against inflammatory conditions and diabetes complications, as well as against deterioration of cognitive functions.

Keywords : pistacia lentiscus, clematis flammula, fraxinus angustifolia, phenolic compounds, biological activity

Conference Title : ICMPH 2023 : International Conference on Medicinal Plants and Herbs

Conference Location : Paris, France

Conference Dates : October 30-31, 2023