

The Gastroprotective Potential of Clematis Flammula Leaf Extracts

Authors : Dina Atmani-Kilani, Farah Yous, Djebbar Atmani

Abstract : The etiology of peptic ulcer is closely related to stress, excessive consumption of nonsteroidal anti-inflammatory drugs, or ethanol. Clematis flammula (Ranunculaceae) is a medicinal plant widely used by rural populations to treat inflammatory disorders. This study was designed to assess the gastroprotective potential of C. flammula extracts. Gastric ulcer was induced by stress, indomethacin, HCl / ethanol, and absolute ethanol on NMRI-type mice. The antioxidant potency of the ethanolic extract of Clematis flammula (EECF) was evaluated on catalase (CAT), superoxide dismutase (SOD), glutathione peroxidase (GPx) activities. Glutathione (GSH) and malonaldehyde (MDA) levels were also quantified. The anti-inflammatory potential was evaluated through the effect of EECF on myeloperoxidase activity (MPO) and vascular permeability. Complementary tests concerning the quantification of mucus levels, gastric motility, inhibition of ATPase H⁺/K⁺ activity, as well as a histopathological study were also undertaken to explore the mechanism of action of the EECF. The EECF exhibited a significant ($p < 0.001$) and optimal (100 mg/kg) gastroprotective effect by elevating SOD, CAT, and GSH levels, thereby minimizing the production of MDA and lowering the activity of MPO and vascular permeability. EECF also increased the rate of mucus production, decreased gastric motility, and completely suppressed the H⁺/K⁺ ATPase activity. Histopathological study confirmed the effectiveness of the extract in the prevention of peptic ulcer. The results obtained in this study demonstrated the gastro-protective effect of EECF via acidic antioxidant, anti-inflammatory, cytoprotective and anti-secretory mechanisms, which may justify its use as a substitute in peptic ulcer treatment.

Keywords : clematis flammula, superoxide dismutase, myeloperoxidase, ATPase, pump

Conference Title : ICMNP 2022 : International Conference on Medicinal Plants and Natural Products

Conference Location : Paris, France

Conference Dates : July 19-20, 2022