Abstract

Objectives: Isolation and identification of phytochemicals of *Crassula capitella* (Thunberg) and evaluation of the anti-arthritic potential of the extract and the major isolated compound; 11-*O*-(4'-*O*-methyl galloyl)-bergenin and underlying their mechanism on rat model of rheumatoid Arthritis (RA).

Methods: Different fractions were subjected to column chromatography giving fourteen compound identified by Mass and NMR spectroscopic techniques. RA was induced by intraplantar injection of complete Freund's adjuvant into the right hind paw of rats. Influence of tested samples in comparable to methotrexate on paw edema, body weight, serum diagnostic markers, cartilage and bone degeneration enzymes, pro-inflammatory mediators and oxidative stress biomarkers in arthritic rats.

Key findings: Fourteen phenolic compounds were isolated and identified for the first time from *C. capitella*. The major compound identified as 11-*O*-(4'-*O*-methyl galloyl)-bergenin. Treatment of arthritic rats with extract or 11-*O*-(4'-*O*-methyl galloyl bergenin with the tested doses can reduce the progression and severity of RA.

Conclusion: *C. capitella* is a new natural and abundant source for 11-*O*-(4'-*O*-methyl galloyl)-bergenin for resolving chronic inflammation diseases as RA through antioxidant, anti-inflammatory and membrane stabilizing mechanism.