Phytochemical and Biological Studies of Some Plants Belonging to Family Crassulaceace

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Abstract

Crassulaceae with approximately 34 genera and 1400 species is one of the most important groups of succulent plants that are widely cultivated as ornamental because their leaves are aggregated into colorful rosettes. *Crassula capitella* and *Crassula arborescens* are two plants cultivated in Egypt and belonging to family crassulaceace were used for this study.

This study include phytochemical investigation of the extracts of both plants which resulted in isolation and identification of 21 compounds belonging to different classes, all the compounds identified for the first time from the genus except Compound 8 [11-*O*-(4'-*O*-methyl galloyl) bergenin] which previously isolated. Anti-arthritic activity of the total alcoholic extract of *C. capitella* and 11-*O*-(4'-*O*-methyl galloyl) bergenin] were evaluated in complete Freund's adjuvant rats and the results showed that 20 mg/ kg of 11-*O*-(4'-*O*-methyl galloyl) bergenin showed potent anti-arthritic activity through lowering serum level of CRP, RF, anti-CCP, TNF-α, IL-1β, IL-6, NO, COX-2, MPO, MDA when compared to methotrexate (2mg/kg). Anti-oxidant, antimicrobial and *in*-

vitro cyclooxygenase inhibitory activity of some of the isolated compounds of both plants were evaluated and results showed that quercetin and gallic acid were the potent anti-oxidant compared to ascorbic acid standard. Bergenin, isorhamentin, procatechuic, vanillic and 11-*O*-galloyl bergenin showed antimicrobial activity against some of the tested micro-organisms with MIC ranging from 12.5 to 100 µg/ ml. α, β-amyrin mixture showed potent cyclooxygenase inhibitory activity with IC_{50} 4.06 and 0.64 µM for COX-1 and COX-2 respectively. Also this study contain part deals with quantative determination of total phenolics and total flavonoids in both plants using Folin ciocalteau reagent and $AlCl_3$ reagent respectively and results showed that *C. capitella* contain the higher percentage of phenolics and flavonoids while quantitation of different compounds in the methanol extract revealed that 11-*O*-(4'-*O*-methyl galloyl) bergenin the major compound detected in C. capitella extract while quercetin was the major detected in C.arborescens extract.

Key words: *C. capitella*, *C. arborescens*, 11-O-(4'-O-methyl galloyl) bergenin, anti-oxidant, anti-rheumatic, anti-microbial