

Phytochemical Research of *Peganum harmala*

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Peganum harmala L. is a medicinally important herb of the family Zygophyllaceae. *Peganum harmala* L. is a perennial herbaceous, glabrous plant growing in the arid and semiarid regions, steppe areas, and sandy soils, related to medicinal, dyeing and food plants. Various parts of *Peganum harmala* including its seeds, fruits, root, and bark, have been used as folk medicine for a long time in different countries. In this work, chemical components of the aerial part of plants *Peganum harmala* L. are identified. The compositions of the aerial part of *Peganum harmala* L. were extracted with hexane and analyzed by gas chromatography – mass spectrometry (GC-MS). Six compounds were detected and their concentrations were determined by the method of normalization of peak areas. Among them, the major compounds are esters of fatty acids (60,732%), amides (7,071%), alkanes (0,142%), alcohols (8,757%), fatty acids (1,958%), ketones (0,042%). High performance liquid chromatography was used in combination with an ultraviolet detector and real-time tandem mass spectrometry (ESI-MS/MS) to analyze the polyphenolic compounds of the extracts. Polyphenolic major compounds are gallic acid 6.19%, quercetin-3-glucoside 3.23% (leaves), gallic acid 5.12%, 10.80% (stems). Also identified of metallic content of *Peganum harmala* L. in the stem, leaf, fruit. As a result of the study, 38 micro and macro elements were found in plant. The antioxidant activity of permanganates was determined (Leventhal method) in plants. The result was 236 mg O₂/l. Analysis of each part of the plant and more detailed information on the specific plants were investigated.