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2 **Introduction**—: *Papaver bracteatum* Lindl. (Persian poppy) is a medicinal plant which grows in
3 mountainous regions ~~in of~~ northern and western Iran. Phytochemical researches ~~have~~ has shown
4 that the pharmaceutically important alkaloid of thebaine is contained in this plant.

5 **Objective**—: In this study, supercritical fluid extraction of thebaine from the capsules and roots
6 of *P. ~~apaver~~ bracteatum* is described and ~~the extract is qualification-qualified~~ and ~~quantification~~
7 ~~quantified analysis of extracts were done~~. Recrystallization of ~~the~~ extracted nanoparticles ~~has~~
8 ~~been is~~ performed using the expansion of CO₂ supercritical solvent and ~~obtained the~~ precipitate
9 ~~was is~~ characterized ~~in order to investigate to~~ determine the effect of ~~different on~~ particle size
10 distribution.

11 **Methodology**—: Extraction was performed in a supercritical extraction system. ~~Extracted The~~
12 ~~extracted~~ thebaine compound was identified using HPLC ~~Electrospray ionization quadrupole~~
13 ~~mass spectrometry (ESI-Q-MS)~~ and quantified by ~~reversed phase high performance liquid~~
14 ~~chromatography (RP-HPLC)~~. Precipitation of ~~the~~ extracted nanoparticles was done using
15 controlled expansion of supercritical fluid solvent and obtained precipitate was characterized by
16 ~~Field Emission Scanning Electron Microscopy (FESEM)~~ and ~~Atomic Force Microscopy (AFM)~~.

17 **Results**—: The percentages of thebaine in ~~the~~ dried capsules and roots ~~was were~~ determined to be
18 at 1.05 and 0.83%, respectively. ~~Optimum micronization conditions were determined as follows:~~

19 ~~The v~~Volume of ~~the~~ extract was 100 µL, precipitation temperature was 60°C, equilibrium and
20 precipitation pressures were 350 and 120 bar, respectively, equilibration and precipitation time
21 was 10 and 30 min, respectively. ~~In Under this these~~ conditions, ~~nanonized~~ thebaine with a
22 particle size distribution ~~between of~~ 6 to 50 nm was obtained.

۲۳ **Conclusion** – The micronization conditions, especially precipitation pressure and volume of
۲۴ extract₂ exhibited significant influence on the particle size of precipitated thebaine.