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Microwave-assisted extraction of artemisinin from *Artemisia annua* L

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Abstract

A new method of microwave-assisted extraction (MAE) is used to extract artemisinin from *Artemisia annua* L. Several solvents were used in MAE such as ethanol, trichloromethane, cyclohexane, *n*-hexane, petroleum ether (30–60 °C), petroleum ether (60–90 °C), No. 120 solvent oil and No. 6 extraction solvent oil. Results show that No. 6 extraction solvent oil is the best solvent in the experiments. It is well discussed that the extraction rate of artemisinin is increased with the increase of grinding degree, solvent to material ratio and dielectric constant of solvent mixed by hexane and cyclohexane. Optimal conditions of MAE of artemisinin can be concluded that the duration of microwave radiation is 12 min, the diameter of raw materials is less than 0.125 mm, the solvent to material ratio is more than 11.3. Compared with Soxhlet method, supercritical CO₂ extraction and normal stirring extraction, MAE of artemisinin from *A. annua* L saves a lot of time, but gives the high extraction rate. The time used

in MAE is only 12 min with 92.1% extraction rate, while Soxhlet method and normal stirring extraction need several hours with only about 60% extraction rate. Supercritical CO₂ extraction gives the lightest color of extractive but lowest extraction rate.



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Keywords

Microwave-assisted extraction; Microwave extraction; Artemisinin; *Artemisia annua* L; Qinghaosu

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