MICROWAVE MULTI-STAGE COUNTERCURRENT EXTRACTION OF DIHYDROMYRICETIN FROM *AMPELOPSIS GROSSEDENTATA*

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The distribution of dihydromyricetin (DMY) in *Ampelopsis grossedentata* was studied in this paper. Effects of microwave radiation on the break of cell wall of *Ampelopsis grossedentata* and the optimization conditions were investgated. The microwave dynamic multi-stage countercurrent extraction (MDMCE) of DMY from *Ampelopsis grossedentata* was probed. The kinetic model of MDMCE was developed. The derivatives of DMY, dihydromyricetin laurate (DMYL), were prepared. The effects of molecular modification on antioxidation activities of DMY were studied. Effects on the microstructure of fresh leaf of *Ampelopsis grossedentata* and re-watering leaf after radiated using microwave were observed through transmission electron microscope. Results indicated that both cell walls above were damaged by microwave radiation, but the cell wall of fresh leaf of *Ampelopsis grossedentata* is more easily ruptured than that of re-watering leaf. The ruptured degree of cell wall increases with the increase of power of microwave at same radiation time. The cell wall is unchanged after radiation for 2 min under 300 w or 450 w. The cell wall is broken slightly after radiation for 2 min under 600 w and broken completely after radiation for 2 min under 900 w. The suitable conditions of microwave radiation were determined by orthogonal test, which are 1200 w, 15 min, and 80 ml of petroleum ether per gram of material. Extraction of DMY from *Ampelopsis grossedentata* by MDMCE was studied. Effects of different solvents, grinding degree of material, temperature, time, pH and liquid-material ratios on extraction yields of DMY were investigated. Results showed that the suitable conditions of extraction are water as solvent, 5～10 min, 90～100 °C, material-liquid ratio 1:20 ~ 1:30 and acidic extraction liquid.The optimal conditions of MDMCE were determined through Design Expert 7.0 and practical conditions, which were 95 C of extraction temperature, 10 min of extraction time, liquid-material ratio 25:1 and pH 5. The kinetic model of microwave-assisted extraction of DMY from *Ampelopsis grossedentata* was developed on the base of the first law of Fick. Mathematic relations between time/liquid-material/grinding degree/temperature and DMY concentration of extracts were determined through experimental data. The kinetic model of MDMCE was obtained through kinetic model of microwave-assisted extraction.

The conversion rate of DMY is about 90 % when reaction time is 60 min between the lauroyl chloride and DMY. It hardly increases after 60 min. The conversion rate of DMY is 88.53 % under room temperature. It hardly increases by enhancing temperature. The conversion rates of DMY increase from 45 % to 90 % with the change of the ratio of DMY to lauryol chloride from 1:1 to 1:4. It hardly increases above 1:4.

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