台灣土肉桂中肉桂醛與乙酸肉桂脂之分析方法與萃取程序開發探討

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ABSTRACT

The purpose of this study is to evaluate the extraction process as well as the analytical methods for those ingredient components from Cinnamomum osmophloeum Kaneh leaves. To achieve this, the supercritical carbon dioxide extraction (CO2 SFE) and Soxhlet extraction were employed. The leaf samples of different age and position of C. osmophloeum were extracted using Soxhlet extraction method with alcohol as a solvent. The results shows that the highest yield of 25.36 mg/g (the tree ’s age is six years) cinnamyl acetate was obtained in the first year spire sample. The maximum level of cinnamaldehyde, on the other hand, was found to be 23.79 mg/g in the second mature leaves (the tree ’s age is three) The extraction of cinnamyl acetate and cinnamaldehyde from spire and mature leaves of C. osmophloeum through the analytical CO2 SFE method was also engaged. The optimal condition for extracting cinnamyl acetate from spire was: 5 mins static extraction at 40 ℃, 2500 psi and then proceeded another 35 mins with dynamic extraction. The yield of cinnamyl acetate was 29.06 mg/g. Nonetheless, the optimal condition of cinnamaldehyde extraction in mature leaves was: 10 mins static extraction at 50 ℃, 3500 psi and then proceeded another 20 mins with dynamic extraction, and the yield was 22.55 mg/g. Additionally, by using different extraction condition, the cinnamyl acetate and cinnamaldehyde could be eluted at first phase (40 ℃, 1500 psi) with yield of 3.68 and 2.33 mg/g, respectively. In contrast, the cinnamyl acetate and cinnamaldehyde at second phase (50 ℃, 3500 psi) were 0.36 and 19.76 mg/g, respectively. These results revealed that the separation of different ingredients was accomplished by the combination of proper temperatures and pressures. The results also demonstrated that the CO2 SFE method reduced the extracting time and solvent wasting, easy handling, and environmental friendly as compared with traditional solvent extraction. The scale-up studied was conduced with preparative CO2 SFE based on the analytical CO2 SFE conditions. The results showed that the extraction yield for cinnamyl acetate and cinnamaldehyde were 20 and 21.74 mg/g, respectively. The recovery was attained some 90% of analytical CO2 SFE. Finally, the extraction of multiplier essential oil from C. osmophloeum leaves was found to be more suitable at low temperature and pressure (40 ℃, 1500 psi). under these conditions, the essential oil recovery of 1.4 and 1.7% was obtained for spire and mature leaves, respectively.

Keywords :

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