

Abstract

Head-space solid phase microextraction (HS-SPME) has become one of the preferred techniques in aroma analysis, offering solvent free, rapid sampling with low cost and ease preparation. HS-SPME is sensitive, selective and compatible with low detection limits, which has been intensively used for the analysis of Chinese medicines. However, its application in the quantitative analysis was limited due to its complex transition of the volatile analytes. Although multiple HS-SPME has been used for the quantitative analysis, its application still restricted because of the inconvenient of multiple HS-SPME.

In present study, a one-step HS-SPME coupled to gas chromatography-mass spectrometry (GC-MS) method was developed for the analysis of volatile components in dry *Pogostemon cablin*. Based on the peak area of patchouli alcohol, the experimental conditions for HS-SPME were optimized. The optimum conditions were: 30 mg *Pogostemon cablin* powder, which was 10 times diluted using anhydrous sodium sulfate, was placed into a 15 ml extraction tube. After incubating at 80 °C for 40 min with stirring speed of 250 r/min, PDMS-DVB coated fiber was inserted and extracted for 40 min at 80 °C with the same stirring speed. Then the fiber was inserted into the injection port and desorption for 100 seconds at 250 °C. DB-5MS capillary with the flow rate of 1mL/min was used for GC-MS analysis. Column temperature program: initial temperature was 90 °C, and then programmed at 0.8 °C/min to 110 °C and held for 5 min at the temperature of 110 °C, then at 1.0°C/min to 134 °C and held for 5 min at the temperature of 134 °C, and finally, at 5.0 °C/min to 143 °C, and held for 10 min at the temperature of 143 °C. The average recovery of patchouli alcohol under the optimum conditions was 91.8 % with RSD 3.0 %. Then the content of patchouli alcohol in ten samples of *Pogostemon cablin* from different areas were determined, the other main volatile components in *Pogostemon* were also estimated by using patchouli alcohol as reference standard. The results showed that the developed method is simple, rapid and reliable, which is suitable for qualitative and quantitative analysis of volatile compounds in *Pogostemon cablin*.

Key words: Head-space solid phase microextraction (HS-SPME), gas chromatography-mass spectrometry (GC-MS), *Pogostemon cablin*, Patchouli alcohol