



Comparative study of aroma liberation in air fresheners of lavender essential oil using gas chromatography/olfactometry.

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Air fresheners are conventionally used to provide a desired fragrance to ambient air, or to mask, neutralize or counteract undesirable odors in the air, or to achieve a combination of these functions. However, a conventional liquid air freshener often present certain disadvantages and limitation as, for example, their performance may be unsatisfactory due to limited or even unacceptable fragrance performance, product longevity, esthetical appearance or temperature product stability over time. The oil nanoemulsions can be an alternative because nanoemulsions are fine oil-in-water dispersions, kinetically stable and also long-term physically stable (1). The objective of this study was to evaluate and compare the liberation of aroma volatile compounds present in lavender essential oil in samples of air fresheners produced by two different methods, using gas chromatography/olfactometry (GC/O). The tests were done blindly. One sample was produced by traditional method mixing alcohol, propylene glycol, water and the essential oil. The other, a nanoemulsion of lavender essential oil, was produced by phase inversion temperature method (2). Five milliliters of air freshener samples were added in a closed environment at constant temperature. Solid-phase microextraction (SPME) was applied in headspace mode to extract the volatile compounds, using the fiber DVB/CAR/PDMS (divinylbenzene/carboxen/polydimethylsiloxane). SPME was performed at 40 °C, 15 min of equilibrium time, 15 min of adsorption time, and 2 min of the desorption time. Analyzes were performed on the sample preparation time, on the 7th, on the 14th and on the 21st days. To perform the olfactometry analysis, a gas chromatograph/flame ionization detector (FID) was used and a sniffing port (3). Trained evaluators performed the olfactometry analysis. It was used a HP-5MS fused silica capillary column (30 m X 0.25 mm X 0.25 µm). Nitrogen was used as carrier gas with a flow rate of 1.0 mL min⁻¹. The temperature of injector, sniffing port and FID detector was 250 °C. The oven temperature program was: 60 °C for 4 min, raising 5 °C min⁻¹ to 180 °C, then 20 °C min⁻¹ to 250 °C, and after reach 250 °C kept for 5 min. Volatile compounds of lavender essential oil present in air fresheners samples were identified by comparison of spectra and linear retention indices of pure essential oil, using a gas chromatograph/mass spectrometry (GC/MS) with the same column and conditions. The most significant aromas found were herbs, citric, fresh, sweet and lavender. Comparing two samples, the aroma intensity of the sample with traditional preparation differs from the 7th day, as well as this sample presented a faster volatilization process. The nanoemulsion sample had better fragrance performance during the time of the experiments and the aromas lasted longer time with a little variation of the intensity over time.

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