

Evaluation of equilibrium headspace concentration of orange beverage emulsion by using solid phase microextraction (SPME) during storage.

ABSTRACT

In this study, the effect of glycerol (0.5, 1 and 1.5% w/w) and vegetable oil (2, 3 and 4% w/w) on the equilibrium headspace concentration of target volatile flavor compounds released from the orange beverage emulsions during storage was investigated by using the headspace solid phase microextraction (HS-SPME). The peak areas of 13 target orange flavor compounds (i.e. ethyl acetate, α -pinene, ethyl butyrate, β -pinene, 3-carene, myrcene, limonene, γ -terpinene, 1-octanal, decanal, linalool, neral and geranial) composed of more than 98% of total peak area were considered as response variables. Among target volatile flavor compounds, the release behavior of β -pinene and 1-octanol was not detectable during storage. The results indicated that the equilibrium headspace concentration of target aldehyde compounds significantly ($p < 0.05$) decreased during storage depending on the type and concentration of supplementary emulsion component. In most cases, the addition of glycerol or vegetable oil to the basic emulsion formulation showed the retaining effect on the target volatile flavor compounds compared to the control sample.

Keyword: Equilibrium headspace; Beverage emulsion; Solid phase microextraction; Orange flavor compounds; Relative headspace intensity.