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Volatile and sensory profiling of cocktail bitters

Arielle J. Johnson ... Susan E. Ebeler

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Highlights

- 16 commercial bitters differed significantly in several sensory attributes.
- The bitters samples also differed significantly in their volatile composition.
- The volatile profile explained $\hat{\approx} 460\%$ of the differences in the sensory responses.
- Not all sensory descriptors were explained by the volatile chemical composition.

Abstract

Aromatic cocktail bitters are derived from the alcoholic extraction of a variety of plant materials and are used as additives in mixed drinks to enhance aroma and flavor. In this study sixteen commercial bitters were analyzed using volatile (GC-MS) and sensory profiling and multivariate statistics including Principal Component Analysis (PCA) and Partial Least Squares Regression (PLS). The samples differed significantly in their citrus, celery, and spice characteristics. 148 volatile compounds were tentatively identified and the composition varied significantly with the type of bitters sample evaluated. PLS analysis showed that the volatile data correlated well overall to the sensory data, explaining 60% of the overall variability in the dataset. Primary aldehydes and phenylpropanoids were most closely related to green and spice-related sensory descriptors. However, the sensory impact of terpenoid compounds was difficult to predict in many cases. This may be due to the wide range of aroma qualities associated with terpenes as well as to concentration, synergistic or masking effects.



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Keywords

Cocktail bitters; Aroma; GC-MS; Sensory descriptive analysis; Multivariate statistics; Botanical extracts

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