Comparison of three fast sensory profiling methods, check-all-that-apply (CACT), CACT with intensity rating, and Napping to study consumers' perception of eight beers

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Introduction and methods

We compared three profiling methods based on consumer perceptions in ability to discriminate and describe products. Consumers (N=135) evaluated sensory properties of eight beers using CATA methodology (1) in two variations, with (n=63) and without (n=73) rating the intensity of checked descriptors. With CATA, consumers rated 35 descriptors grouped in 7 overall categories (berries, floral, hoppy, nutty, roasted, spicy/herbal, woody). Additionally 40 of the consumers performed a partial Napping® (2), with taste and flavor properties only. ANOVA-PLSR and Discriminant-PLSR were used to evaluate the discriminative ability of the methods and descriptors (3).

Results

ANOVA-PLSR showed that all samples were perceived as different in all three methods, whereas Discriminant-PLSR showed that all three methods had similar numbers of discriminating descriptors. By CATA, 32 and 29 descriptors for without and with rating intensity were significant, for Napping® it was 37. Multiple Factor Analysis was used to derive an overall product map and to compare it to product configurations from individual methods. Both qualitative and quantitative analysis (comparison of RV coefficients of MFA configurations) revealed near perfect agreement of the three methods in terms of product differences. Compared to the overall configuration, CATA without intensity rating had an RV-coefficient of 0.98, with intensity rating 0.99, and Napping 0.97.

Discussion and conclusions

Results show that the precision and reproducibility of sensory information obtained by consumers by CATA is comparable to that of Napping®. The choice of methodology for consumer descriptive methods should then be based on whether it is desired to have consumers articulate their own perception of descriptors, or if it sufficient to present them to an existing vocabulary. Napping is slower and more laborious, and better for explorative studies with smaller number of consumers, whereas, CATA is faster, less labor-intensive and thus more suitable for larger groups of consumers.

References

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