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A New Approach to Estimate the In-mouth Release Characteristics of Odorants in Chewing Gum

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The objective of this study was to develop a new approach that can be used to estimate the in-mouth release characteristics of odorants in chewing gum. This technique, called the "Retronasal Flavor Impression Screening System (R-FISS)," is based on a modified dynamic headspace gas sampling technique. By application of the R-FISS technique, the in-mouth release characteristics of odorants during the chewing of gum was indicated by the peak area ratio, which was calculated by comparing the peak area for 10 min to the peak area for 1 min, of each odorant exhaled from the human nose. In addition, a good overall regression coefficient was found for the correlation between the peak area ratios of each odorant in the model chewing gum obtained by R-FISS and the retention indices on a polar stationary phase GC column (DB-Wax). Therefore, the in-mouth release of odorants in chewing gum seems to be capable of being predicted by their RIs on a polar stationary phase GC column (DB-Wax), and these results appear to suggest that two parameters (vapor pressure and hydrophobicity/hydrophilicity) are the key factors for determining the in-mouth release of odorants from chewing gum.

Keywords: flavor release, aroma release, flavor impression, chewing gum, retention index

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