Abstract

Chicory (witloof) is a typically Belgian vegetable appreciated for its slightly bitter taste. Up until now no measurements exist to objectively quantify the sensory characteristics of chicory. Taste and texture of nine different chicory hybrids were analyzed by sensory and instrumental analysis (three-point bending test, high performance anion exchange with pulsed amperometric detection, high performance liquid chromatography and visible/near infrared spectroscopy). The main objective of the study was to correlate and predict the sensory attributes and consumer acceptance of chicory with destructive physico-chemical measurements and non-destructive Vis/NIR data, to avoid time- and money-consuming sensory profiling in the future. A univariate analysis showed that glucose and sucrose concentrations in chicory leaves were highly correlated with the attributes crunchiness and bitterness. The fructose concentrations however were correlated with the sweetness score of the panel. When performing partial least squares on all destructive instrumental parameters and Vis/NIR data for the major sensory attributes of chicory, satisfactory prediction models (ratio of standard deviation to root mean square error of cross-validation (RPD) > 2) could be established for all attributes but sweetness using all physico-chemical parameters. Using Vis/NIR data improved the prediction capacity of the sweetness model, and this technique proved to be useful in predicting the sensory quality of chicory.