**Abstract**

This paper relates aroma compounds measured by means of an electronic nose and headspace fingerprint mass spectrometry (HFMS) to sensory analysis for tomato aroma evaluation. Eight tomato cultivars harvested at the red-ripe stage of maturity were selected and assessed on days 4, 7, 10 and 14 after harvest. Descriptive sensory analysis was performed by eight trained panellists. For instrumental analysis a quartz microbalance electronic nose (QMBE-nose), headspace fingerprint mass spectrometry and gas chromatography–mass spectrometry (GC–MS) as reference techniques were employed. Initially, canonical discriminant analysis (CDA) was performed separately on the instrumental and sensory data sets to explore the structure of each data set. The results showed that the sensory data contained information related to the cultivar but not to shelf life as was found with the instruments. Sensors of the QMBE-nose, GC aroma values and signals of the HFMS, were further studied to investigate their relationship with the sensory profile of tomato cultivars using generalized procrustes analysis (GPA). The results demonstrate the potential of the electronic nose and the headspace fingerprint MS to complement routine sensory analysis of tomatoes.