

Abstract

Tomatoes, harvested red ripe, were stored for 21 days at 20 °C, a relative humidity of 55%, and an air velocity $<0.1 \text{ m s}^{-1}$ to simulate conditions in retail outlets and households. Three cultivars, which differed in their contents of flavour compounds (aroma volatiles, titratable acids (TAs) and reducing sugars) and their intensity of sensory attributes, were investigated. The results generally indicated that changes in most of the flavour compounds during the postharvest phase showed the same trends. This was independent of the starting level of the aroma compounds which is based on the different genetic potential of the cultivars. Eight aroma volatiles (hexanal, (*E*)-2-heptenal, (*E,E*)-2,4-decadienal, 6-methyl-5-hepten-2-one, geranylacetone, 2-isobutylthiazole, 1-nitro-2-phenylethane and geranial) increased and one volatile (methyl salicylate) decreased in the three cultivars during the postharvest phase. The volatile (*Z*)-3-hexenal decreased only in the cultivar 'Mickey' and with (*E*)-2-hexenal in the cultivar 'Vanessa', but this was only after storage for 10 days. No uniform trend could be detected for the three volatiles 1-penten-3-one, 3-methyl-butanal and 1-nitro-3-methylbutane. In the three cultivars, the intensity of the attribute 'tomato-like' (odour, flavour and after-taste) increased, but so did the intensity of the undesired attribute 'mouldy' (odour, flavour and after-taste). A multivariate statistical analysis showed that hexanal and 2-isobutylthiazole were related to the mouldy attribute. Changes of flavour components and related sensory attributes appeared to lead to an altered balance of potentially desirable and undesirable properties when tomatoes were stored ripe.