



The effects of storage and temperature on flavor of three modern tomato varieties

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Introduction

Consumers are advised to store tomatoes outside the fridge, to avoid chilling injury and decline in flavour. This advice was recently confirmed in studies, showing a reduction in flavor, and decrease in lipid and carotenoid derived volatiles as a result of cold storage. However, these studies were limited in setup or used ancient varieties (Ailsa Craig) with low quality levels. We hypothesized that storage affects tomato flavor, and that the combined effects of storage and temperature on liking depend on the quality level of the variety.

Materials and Methods

Three modern tomato varieties were chosen for this study: Roterno (left), Briosio (middle) and Piccolo (right).



Upon arrival to the lab, fresh fruits (T_0) were divided over two treatments: **control storage** (7 days of storage at 15°C) and **cold storage** (7 days of storage at 4°C). Within a variety, the stored fruits were compared with **fresh harvest** fruits by flavour panels. Liking was scored by a consumer panel ($n \approx 50$). Flavor attributes were scored by a trained sensory panel ($n \approx 25$). All fruits were placed at 20°C the night before testing to equalize eating temperature. Per sample pieces of different fruits were tasted and samples were served according to a randomized design. All treatments were compared with the flavor level of T_0 by means of the Instrumental Flavor Prediction Model (Wageningen UR Greenhouse Horticulture, 2011). Data of volatile compounds were collected by means of SPME-GC-MS and analysed. These results will be published separately.

Conclusions

The effects of storage and temperature on tomato organoleptic quality were slightly different depending on the variety. Acidity decreased during storage, except for Briosio in cold storage. Bite was influenced by storage only in Roterno. Aroma presence was lowered by storage in Briosio and by cold storage in Piccolo. In general, 7 days of storage at control and cold storage conditions had just minor impact on overall liking.

Results

