

Effects of storage time and temperature on the chemical composition and organoleptic quality of Gannan navel orange (*Citrus sinensis* Osbeck cv. Newhall)

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Abstract

In the present study, the effects of postharvest storage time and temperature on the chemical composition and organoleptic quality of Gannan navel orange were investigated for the first time. Our results indicated that titratable acidity (TA) decreased continuously during the whole storage period irrespective of the temperature. However, the contents of TSS (Total Soluble Solids), sugars (sucrose, fructose and glucose), flavonoids (narirutin, hesperidin and didymin), and Vc (vitamin C) increased in the initial storage time, reaching the maximum values after 1 week of storage for flavonoids and Vc, 2 weeks for TSS, sucrose and fructose, while 3 weeks for glucose, then exhibited a fluctuating downward trend during the rest of storage time at 20 °C. Compared to the room temperature storage, the decreased temperature (4 °C) influenced the chemical composition of stored fruits in a similar pattern, whereas delayed the variation of most chemical components, especially TA and Vc, and benefited the maintenance of fruit quality by retarding the increment of TSS/TA value. Furthermore, Pearson's correlation analysis revealed that all flavonoids tested had a significant negative correlation with glucose during the storage period ($p < 0.01$). Finally, the sensory attributes of orange juice from postharvest fruits were evaluated by panelists, indicating that the fruits stored for 2 weeks at 20 °C, or 3 weeks at 4 °C had the highest scores in overall acceptability. The results revealed here might provide useful information for orange growers, packing houses, and consumers.