

Accepted Manuscript

Title: Comparative Analysis of Three Types of Peaches: Identification of the Key Individual Characteristic Flavor Compounds by Integrating Consumers' Acceptability with Flavor Quality

Author: XI Wanpeng, QIAO Zheng, LU Juanfang, QUAN Junping

PII: S2468-0141(17)30149-8

DOI: <http://dx.doi.org/doi: 10.1016/j.hpj.2017.01.012>

Reference: HPJ 60

To appear in: *Horticultural Plant Journal*

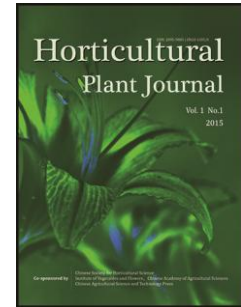
Received date: 12-10-2016

Revised date: 1-12-2016

Accepted date: 4-1-2017

Please cite this article as: XI Wanpeng, QIAO Zheng, LU Juanfang, QUAN Junping, Comparative Analysis of Three Types of Peaches: Identification of the Key Individual Characteristic Flavor Compounds by Integrating Consumers' Acceptability with Flavor Quality, *Horticultural Plant Journal* (2017), <http://dx.doi.org/doi: 10.1016/j.hpj.2017.01.012>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Comparative Analysis of Three Types of Peaches: Identification of the Key Individual Characteristic Flavor Compounds by Integrating Consumers' Acceptability with Flavor Quality

XI Wanpeng^{a, b, c, *}, QIAO Zheng^a, LU Juanfang^a, and QUAN Junping^d

^a College of Horticulture and Landscape Architecture, Southwest University, Chongqing 400716, China

^b Agricultural College, Shihezi University, Shihezi, Xinjiang 832003, China

^c Key Laboratory of Horticulture Science for Southern Mountainous Regions, Ministry of Education, Chongqing 400715, China

^d Chongqing Nanshan Botanical Garden, Chongqing 400065, China

Received 12 October 2016; Received in revised form 1 December 2016; Accepted 4 January 2017

Available online date

Abstract

In order to recognize the key flavor compounds influencing the consumers' choice for honey peach, nectarine, and flat peach and provide important information for orientation breeding, sugars, organic acids, and aroma volatiles in 3 types of peaches were examined by high performance liquid chromatography (HPLC) and gas chromatography-mass spectrometry (GC-MS) and their key individual characteristic flavor compounds were identified by multivariate analysis integrated with consumers' evaluation. No significant differences in sugar and organic acid were observed between 3 types of peaches. In hierarchical clustering analysis (HCA) and principal component analysis (PCA) models, 3 types of peaches could not be differentiated by sugars or organic acids, but could be identified completely by aroma volatiles or by flavor compounds. A partial least squares regression (PLSR) model revealed that the key individual characteristic volatiles in nectarine, honey peach, and flat peach are C9 compounds and terpenic compounds, norisoprenoids and C6 compounds, and benzaldehyde, γ -decalactone, and δ -dodecalactone, respectively. These results suggest that sugars and organic acids form the background flavor of peach fruit and lactones shape the typical peach aroma. However, the individual aroma volatiles play the decisive role in unique flavor determination of different types of peaches.

Keywords: peach; sugar; organic acid; aroma volatile; flavor; consumer acceptability

1. Introduction

Peach (*Prunus persica* L. Batsch) fruits are widely loved by consumers for their unique flavor, texture, juiciness, and nutritional value. Generally, nectarine, honey peach, and flat peach are the main fresh types. However, it is very interesting that honey peach, nectarine, and flat peach are appreciated differently by consumers mainly due to their respective characteristic flavor qualities. Based on this point, it is of prime importance in the food industry for orientation breeding to recognize which flavor compounds influence the consumers' choice.

Fruit flavor is determined by the combination of sweetness, sourness, and aroma (Kader, 2008; Klee, 2010; Klee and Tieman, 2013), and these qualities mainly depend on sugars, organic acids, and aroma volatiles, respectively (Xi et al., 2014). The composition of peach flavor compounds has been thoroughly studied and previous research has investigated the effects of fertilizer levels (Álvarez-Fernández et al., 2003), iron (Fe) deficiency (Álvarez-Fernández et al., 2003), tree pruning intensity (Kumar et al., 2010), fruit bagging (Wang et al., 2010), soil tillage (Raffo et al., 2008), and carbon dioxide enrichment on flavor quality of peach fruit (Xi et al., 2014). The composition and content of sugars, organic acids, and aromas are also markedly regulated by fruit development and

* Corresponding author. Tel.: +86 23 68251047.

E-mail address: xwp1999@zju.edu.cn

Download English Version:

<https://daneshyari.com/en/article/8892230>

Download Persian Version:

<https://daneshyari.com/article/8892230>

[Daneshyari.com](https://daneshyari.com)