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Short communication

Determination of amino acids and mineral elements in flower tissue of *Amygdalus persica* var. *persica* f. *duplex*

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ABSTRACT

Flowering peach trees, whose flowers have not be used and result in lot of waste of resources. This paper detected 18 kinds of amino acids and eight trace elements to provide data support for resource utilization of flowering peach blossom. Results showed that two amino acids (Asp and Pro) were higher than 2.0%, Glu, Lys, Leu, Ala and Val were more than 1.0% in flowers of flowering peach, especially Pro was the highest. Flowers of flowering peach contain many kinds of mineral elements, Mg, Ca, K and Mn were very high, which is beneficial for human health. All these data proved that flowers of flowering peach have high value as foods.

Key words: Amino acids, flowering peach trees, flowers, trace elements.

Flowering peach, a variant of the peach only for viewing flowers, belongs to semi-double or double variety of ornamental peach. Flowering peach blossom from March to April in the East China area, whose flowers are plump, colourful, and the flower types are various (Cheng, 1). The flowers of flowering peach has high ornamental value and it can be seen everywhere in the community, parks and streets. In addition as ornamental flowers, it is a serious waste of peach flowers. The aim of the study is to provide experimental data and theoretical basis for the better development and utilization of the flowers of flowering peach.

Flowers of flowering peach were picked from both sides of the road near the China Agricultural University Experimental Station. Choosing fresh, pink flowers without herbivory, washing with ultrapure water, dried in the shade at room temperature, then dried at 80°C, cooled to room temperature, crushed and stored in a desiccator for use. Japan Hitachi 835-50 type high speed amino acid automatic analyzer; Inductively Coupled Plasma Mass Spectrometry Apparatus (ELAN DRCI) was used for analysis. Amino acid automatic sanalyzer test conditions were as time was 72 min., ion exchange column 26 mm × 150 mm. The column temp. 50°C; pump flow rate of 0.23 ml/ min., pump pressure 8.8 MPa; reaction temp.of 27°C; and humidity 58% RH.

Accurately weighed 1.0 g powder of air-dried flowers of flowering peach in a dry conical flask, adding 10 ml of concentrated nitric acid for 24 h, placing overnight. Digestion was done till the disappearance of solids on the electric heating plate, followed by addition of 5 ml of perchlorate and warmed till samples became be clear. The sample residue was moved into a 50 ml volumetric flask, diluted to the scale for test (Rui *et al*., 4; Li *et al*., 2).

Table 1. Contents of different amino acids (µg/g) in peach flower tissue.

Amino acid	Content
Thr	0.85 ± 0.06
Asp	2.03 ± 0.12
Ser	0.68 ± 0.04
Glu	1.89 ± 0.09
Pro	2.34 ± 0.13
Gly	0.91 ± 0.08
Ala	1.30 ± 0.15
Cys	0.46 ± 0.03
Val	1.08 ± 0.15
Met	0.52 ± 0.06
Ile	0.93 ± 0.10
Leu	1.56 ± 0.08
Tyr	0.69 ± 0.05
Phe	0.78 ± 0.04
Lys	1.61 ± 0.12
His	0.62 ± 0.03
Arg	0.67 ± 0.03
Trp	0.35 ± 0.02

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Trace elements concentrations were determined by inductively coupled plasma mass spectrometry (ICP-MS) following standard procedures.

As evident from the data (Tables 1 & 2), two amino acids (Asp and Pro) were higher than 2.0% in flower tissue. Pro was the highest amino acid, which could be related to the active growth conditions. The second class had Glu, Lys, Leu, Ala and Val, whose contents were more than 1.0%. The results obtained are in line with those of Liu *et al*. (3).

Flower tissue of peach contained several mineral elements, Mg, Ca, K, Mn, which were very high and also beneficial for human health. Selenium, as an important essential elements for human health, was also detected and the contents was high (15.30 ng/g). Most trace elements were different with earlier results, which could be due to difference in the growth conditions and plant species (Liu *et al*., 3).

Table 2. Contents of important trace elements (µg/ g) in peach flower tissue.

Mineral element	Content
Fe	76.53 ± 3.40
Mn	512.39 ± 22.36
Cu	10.62 ± 0.29
Zn	26.53 ± 1.37
Se	15.30 ng/g
Ca	3509.89 ± 77.99
Mg	3766.57 ± 120.91
K	2190.80 ± 66.75

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