

Variation of the free amino acids in mature fruits of 54 lychee (*Litchi chinensis* Sonn.) germplasms

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Abstract

Fruit flavor and nutrition are significantly influenced by free amino acids (FAAs). To understand the diversity of the FAA composition, mature fruits of 54 lychee (*Litchi chinensis* Sonn.) germplasms grown in the National Litchi Germplasm Repository (Guangzhou) were used in this study. A brief sample preparation procedure based on hot water extraction was carried out. An AccQ-tag precolumn derivatization and reversed-phase high-performance liquid chromatography (HPLC) approach was used to evaluate the concentration of 20 free amino acids in lychee fruits. The results showed that the total amino acid content of lychee pulp is abundant and varies significantly (1172.26–4767.35 µg/g FW). Alanine (259.99–1831.64 µg/g FW) and γ-aminobutyric acid (187.17–1763.25 µg/g FW) were the dominating FAA in litchi fruit, followed by aspartic acid (55.68–409.51 µg/g FW), proline (14.09–547.90 µg/g FW), and arginine (14.14–252.95 µg/g FW). Other proteinaceous amino acids were also identified and quantified in the lychee germplasm. By comparing the FAA content of various germplasms, a correlation between the amino acid content and lychee fruit ripening period was also analyzed. These essential results could significantly improve lychee breeding operations and give us a thorough understanding of the lychee germplasm resources.

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