

METABOLOMICS ANALYSIS REVEALED THE MECHANISM OF CHILLING INJURY DEVELOPMENT IN DURIAN FRUIT DURING LOW-TEMPERATURE STORAGE

**Yuansuo Zhang¹, Yi Chen¹, Yingying Wei¹, Shu Jiang¹, Jianfen Ye¹, Feng Xu¹, Jiahui Chen¹,
Phebe Ding², Xingfeng Shao¹**

¹Zhejiang Key Laboratory of Intelligent Food Logistic and Processing, Zhejiang-Malaysia Joint Research Laboratory for Agricultural Product Processing and Nutrition, College of Food Science and Engineering, Ningbo University, Ningbo 315800, China

²Faculty of Agriculture, Universiti Putra Malaysia, Malaysia, 43400 UPM, Serdang, Selangor, Malaysia

shaoxingfeng@nbu.edu.cn

Durian (*Durio zibethinus* L.), an important tropical fruit crop in Southeast Asia, is prone to chilling injury (CI) during low temperature storage after harvest, which seriously affects its commodity quality. To investigate the mechanism of CI development in durian fruit, we carried out phenotypic analysis and physiological index determination of durian fruit stored at 5°C and 15°C, and explored the main pathways affecting the occurrence of CI in durian fruit by metabolomics. The results showed that there was obvious water core disease inside the durian stored at 5°C, and the MDA content of pulp was also evidently higher than that at 15°C. In addition, the results of metabolomics indicated that the occurrence of CI in durian fruit was accompanied by the activation of arginine and proline metabolism, linolenic acid metabolism, citric acid metabolism and other pathways, and the contents of proline, linolenic acid, arginine and isocitric acid involved in the above pathways were significantly up-regulated. The above may be the response mechanism of durian fruit to cold stress, which can provide theoretical guidance for the subsequent research on the regulation of durian CI development.

Keywords: *Durio zibethinus* L., postharvest storage, chilling injury, pulp, metabolomics