Journal of Advanced Research 9 (2018) 79–85

Contents lists available at ScienceDirect

Journal of Advanced Research

journal homepage: www.elsevier.com/locate/jare

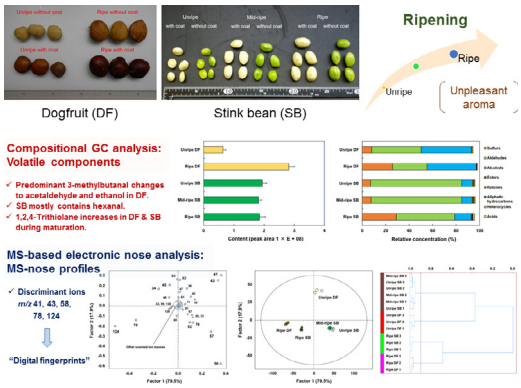
Original Article

Volatile aroma components and MS-based electronic nose profiles of dogfruit (*Pithecellobium jiringa*) and stink bean (*Parkia speciosa*)

Yonathan Asikin [a,*], Kusumiyati [b], Takeshi Shikanai [c], Koji Wada [a]

[a] Department of Bioscience and Biotechnology, Faculty of Agriculture, University of the Ryukyus, 1 Senbaru, Nishihara, Okinawa 903-0213, Japan
[b] Faculty of Agriculture, Padjadjaran University, Jalan Raya Bandung-Sumedang KM 21, Jatinangor, West Java 45363, Indonesia
[c] Department of Regional Agricultural Engineering, Faculty of Agriculture, University of the Ryukyus, 1 Senbaru, Nishihara, Okinawa 903-0213, Japan

GRAPHICAL ABSTRACT



ARTICLE INFO

Article history:
Received 12 September 2017
Revised 11 November 2017
Accepted 11 November 2017
Available online 14 November 2017

Keywords:
Volatile aroma components
MS-based electronic nose
Dogfruit
Stink bean
Ripening stage

ABSTRACT

Dogfruit (*Pithecellobium jiringa*) and stink bean (*Parkia speciosa*) are two typical smelly legumes from Southeast Asia that are widely used in the cuisines of this region. Headspace/gas chromatography/flame ionization detection analysis and mass spectrometry (MS)-based electronic nose techniques were applied to monitor ripening changes in the volatile flavor profiles of dogfruit and stink bean. Compositional analysis showed that the ripening process greatly influenced the composition and content of the volatile aroma profiles of these two smelly food materials, particularly their alcohol, aldehyde, and sulfur components. The quantity of predominant hexanal in stink bean significantly declined ($P < 0.05$) during the ripening process, whereas the major volatile components of dogfruit changed from 3-methylbutanal and methanol in the unripe state to acetaldehyde and ethanol in the ripe bean. Moreover, the amount of the typical volatile flavor compound 1,2,4-trithiolane significantly increased ($P < 0.05$) in both ripened dogfruit and stink bean from 1.70 and 0.93%, to relative amounts of 19.97 and 13.66%, respectively. MS-based nose profiling gave further detailed differentiation of the volatile profiles of dogfruit and stink bean of various ripening stages through multivariate statistical analysis, and provided discriminant ion masses, such as m/z 41, 43, 58, 78, and 124, as valuable "digital fingerprint" dataset that can be used for fast flavor monitoring of smelly food resources.

Peer review under responsibility of Cairo University.
* Corresponding author.
E-mail address: yonathan.asikin@gmail.com (Y. Asikin).

https://doi.org/10.1016/j.jare.2017.11.003
2090-1232/