

Identification of Potent Odorants in Different Cultivars of Snake Fruit [*Salacca zalacca* (Gaert.) Voss] Using Gas Chromatography–Olfactometry

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Abstract

Three cultivars of snake fruits, Pondoh Hitam, Pondoh Super, and Gading, were freshly extracted using liquid–liquid extraction. The aroma compounds of the three samples were analyzed by GC–MS and GC–olfactometry using the nasal impact frequency (NIF) method. A total of 24 odor-active compounds were associated with the aroma of snake fruit. Methyl 3-methylpentanoate was regarded as the character impact odorant of typical snake fruit aroma. 2-Methylbutanoic acid, 3-methylpentanoic acid, and an unknown odorant with very high intensity were found to be responsible for the snake fruit's sweaty odor. Other odorants including methyl 3-methyl-2-butenate (overripe fruity, ethereal), methyl 3-methyl-2-pentenoate (ethereal, strong green, woody), and 2,5-dimethyl-4-hydroxy-3[2]-furanone (caramel, sweet, cotton candy-like) contribute to the overall aroma of snake fruit. Methyl dihydrojasmonate and isoeugenol, which also have odor impact, were identified for the first time as snake fruit volatiles. The main differences between the aroma of Pondoh and Gading cultivars could be attributed to the olfactory attributes (metallic, chemical, rubbery, strong green, and woody), which were perceived by most of the panelists in the Pondoh samples but were not detected in the Gading samples. This work is a prerequisite for effective selection of salak genotypes with optimal aroma profiles for high consumer acceptance.

Keywords: Aroma; volatiles; gas chromatography–mass spectrometry; gas chromatography–olfactometry; snake fruit; stir bar sorptive extraction