Piyaluck Hongsa 2014: Identification of Aroma Active Compounds in Flash Fried Rice. Master of Science (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Associate Professor Siree Chaiseri, Ph.D. 107 pages.

This study aimed to identify aroma active compounds in the flash fried rice (FFR) and to characterize the aroma attributes in FFR and stir fried rice (SFR). Gas chromatography-mass selective detector (GC-MS) was used to determine the contents of volatile compounds. A total of 72 compounds were identified in FFR and 69 compounds were identified in SFR. Aroma active compounds in both fried rice samples were identified and tentatively identified using a combine system incorporating both gas chromatography-olfactometry (GC-O) and two dimensional gas chromatography-time of flight mass spectrometry (GCxGC-TOFMS). The prominent odorants that had the $\log_3$FD factor of 5 in the typical SFR were (*E*,*Z*)-2,4-nonadienal (raw white rice) and acetophenone (sweet). Moreover, in the typical SFR also found (*E*,*E*)-2,4-heptadienal (stir-fried oil), (*E*,*E*)-2,4-octadienal (cucumber peel) and octanoic acid (oily, sweet) with $\log_3$FD factor of 4. In FFR, there were 2,3-dimethyl-5-ethylpyrazine and 2-pentylfuran that had wok aroma characteristic with $\log_3$FD factors of 4. The other prominent odorants in flash fried rice that had the $\log_3$FD factor of 5 were octanoic acid (oily, sweet) and acetophenone (sweet). 2,3-dimethylpyrazine (roast), (*E*,*E*)-2,4-heptadienal (stir-fried oil), nonanal (scented candle), 2-octanone (oily, sweet), (*E*,*E*)-2,4-hexadienal (fruity), 1-octen-3-one (mushroom) and hexanoic acid (fatty, oily) with $\log_3$FD factor of 4. The descriptive sensory analysis was performed to define the aroma attributes in fried rice samples. FFR had significant difference in heated oil, smoky, acrid, wok, animal fat, dark brown, burnt, briny and dried aroma from SFR ($p \leq 0.05$).

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