Tunyatorn Piyachaiseth 2010: Aroma Compounds in 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. 135 pages.

Flash-frying technique is similar to stir-frying but it allows fire to contact food giving a unique smoke aroma, so called "wok flavor". This experiment was to study the components of wok flavor in stir-fried rice generated from flash-frying compare with stir-frying technique. Volatile compounds from flash-fried rice, stir-fried rice and steamed white rice were extracted from the sample by using diethyl ether and separated from the oil matrix using high vacuum distillation unit. The extracted volatiles were analyzed by gas chromatography-mass spectrometry (GC-MS). A total of 188 volatile compounds were identified in flash-fried rice, 154 in stir-fried rice and 57 in steamed white rice. The highest concentration was acetic acid in all samples follows by (*E,E*)-2,4-decadienal, (*E*)-3-heptenal, nonanal and 7-methyl-3,4-octadiene in flash-fried rice, (*E,E*)-2,4-decadienal, (*E*)-2-heptenal, 2,4-decadienal and nonanal in stir-fried rice and 2,3-butanediol, 2,4-di-*tert*-butylphenol, 1,3-butanediol and 2,3-dihydro-3,5-dihydroxy-6-methyl-4*H*-pyran-4-one in steamed white rice. Aroma Extract Dilution Analysis (AEDA) using a gas chromatography-olfactometry (GC-O). The prominent odorants that had the FD factor = 81 in flash-fried rice were (*E,E*)-2,4-heptadienal (stir-fried oil), nonanal (scented candle), heptanone (metallic, rust) and 2 unknown (fishy, salty, sweet, stale). There were 2 unknowns that had wok aroma characteristic with FD factors of 9 and 0 but were not found in stir-fried rice. The typical stir-fried rice had octadienone (metallic, rust) and unknown (sweet) with FD factor of 81 as its prominent aroma compounds. 2-Acetyl-1-pyrroline (sweet, pandan like) and unknown (acetic acid) with FD factor of 27 and 3 respectively in steamed white rice. Different from control, discriminative test, was used to differentiate flash-fried rice, stir-fried rice and steamed white rice odor. Panelists could detect the difference of the unique smoke aroma ($p \leq 0.01$). Aroma compounds from flash fried rice were extracted using ethanol at the ratio of 80 g flash-fried rice per 360 ml ethanol in order to be used in a stir-fried sauce. The ethanolic extract was added to stir-fried sauce at 0%, 10%, 20% and 30%. The panelists preferred the sample with 10% ethanolic extract than the other samples ($p \leq 0.01$).

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