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ONLINE ISSN : 1881-3984

PRINT ISSN : 1344-6606

Food Science and Technology Research

Vol. 11 (2005) , No. 3 pp.278-287

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Influence of Butter and/or Vegetable oil on Flavors of Roux Prepared from Wheat Flour and Fat/Oil

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(Received: April 6, 2005)

(Accepted: August 6, 2005)

To examine the influence of preparation method (white or brown roux prepared by heating to 130°C and 170°C, respectively) and fat/oil ingredients (butter fat, corn oil and salad oil), the flavors of roux prepared from wheat flour were studied by sensory analysis and chemical analyses of the aroma compounds with gas chromatography (GC) and GC-MS, followed by GC-Olfactometry.

Sensory evaluation of roux flavors in butter roux, corn oil roux and salad oil roux showed that the butter roux had a strong sweet odor and both the butter roux and the corn oil roux had generally preferable flavor. Then, the various types of roux were subjected to chemical analyses.

Through comparisons of each component for the butter roux and the corn oil roux, it was found that the difference in flavor was especially apparent in the amount of carbonyl compounds and Maillard reaction products. That is, the butter roux was composed of largely aliphatic methyl ketones (C7-C11) in both the white roux (heated to 130°C) and the brown roux (heated to 170°C), and mostly furans and somewhat cyclic ketoenols such as maltol in the brown roux, while the corn oil roux included more benzaldehyde in the white roux, and phenylacetaldehyde and (*E, E*)-2, 4-decadienal in the brown roux. Furthermore, GC-O analysis showed that butanoic acid, which confers a rancid odor, δ -decalactone, which confers a floral odor, and furfuryl alcohol and 2-nonanone with a floral odor, respectively might contribute to the flavor of the butter roux, while (*E, E*) 2, 4-decadienal with a pungent odor and benzaldehyde with an almond-like odor might affect the flavor of the corn oil roux. Therefore, the difference of flavor of the two roux may originate in the composition of the fatty acids of fat/oil.

Mixing various fat/oil in the form of butter and corn oil showed the effect of using proportions of ingredients for aroma of the cooked product, especially in the white roux.

Keywords: [roux](#), [flavor](#), [fat/oil](#), [sensory evaluation](#), [aroma component](#)

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To cite this article:

Influence of Butter and/or Vegetable oil on Flavors of Roux Prepared from Wheat Flour and Fat/Oil Yukie KATO, *FSTR*. Vol. **11**, 278-287. (2005) .

doi:10.3136/fstr.11.278

JOI JST.JSTAGE/fstr/11.278

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