平成７年度　博士論文

油脂の関与する感覚用語の体系化と実験的検証

－“あぶらっこい”を中心として－

お茶の水女子大学大学院

人間文化研究科人間環境学専攻

早川　文代

Systematical Characterization and Experimental Investigation of Sensory Terms Regarding Oils and Fats - Focusing on "Oiliness" -

Fumiyo Hayakawa

ABSTRACT

Oils and fats play an important role both in our food preference and in our healthful dietary life. Recently, more and more high-preference foods have been demanded, and less and less oil take-in contorol has been required. It is necessary to grasp the terms regarding oils and fats objectively. This paper groped for a methodology with trial and error. Through investigation, experiments and analyses, the following results were gained.

A large number of terms in relation to oils and fats were collected using questionnaire by a 30-member laboratory panel. Then 26 terms, such as "*beto-beto-shita*" (viscous, sticky) and "*aburakkoi*" (oily), were selected as sense-descriptive terms regarding oils and fats by reference to literatures and through table discussion by a 5-member expert panel. These terms were examined by calculating the lipid contents of foods in association with them.

"Oily" and "greasy" were found to be particular terms which relate with several food properties, such as appearance, taste and texture, while the other terms correspond with a single property.

In this paper, "oily" and "greasy" were unified into one word "oily" based on the survey of the kind of oils and fats contained in the foods linked with each term and on the sensory evaluation for fat-in-oil dispersed systems with 0-16 w/w% palm fat.

The assosiation of oiliness with various kinds of foods was studied. The intensity of oiliness for 90 foods was evaluated according to 4-grade system by consumer panel of 1500 subjects. The data were analyzed through Quantification Method III, and the values of 4 categories for each item were obtained. The certain order was

seen among categories in the data. This shows that there is a common concept for "oiliness". The concept is substantially independent of such attributes as sex, age and health consciousness of the subjects. The order was also found among items, which indicates that scaling of "oilines" is possible, and the intensity of "oiliness" of various kinds of foods were obtained quantitatively.

Using 22 actual foods selected from these 90 foods, a formulation of oiliness was attempted. A sensory test was done by a 12-member trained panel. The hardness, total and surface lipid contents and water content for each food were estimated. However, no proper formula could be found.

Thus, oil-in-water emulsions consisting of corn oil, distilled water, egg yolk and a thickening agent were used as a food model to investigate the relationship between oiliness and physical properties of food. The minimum oil volume fraction which over 65% of the trained tasters judged to be oily was 0.35. A sensory test on emulsions of various composition prepared with different mixing ratios was done, and the particle-size distribution and viscosity were measured. The results of a multiple regression analysis indicate that the intensity of oiliness depend on viscosity, which can be expressd in the form of a single regression equation:

$Y = -1.246 + 0.695X$ (Y, oiliness; X, ln of apparent viscosity at a shear rate of $50s^{-1}$).

With an increase of acetic acid in emulsions, the intensity of oiliness decreased significantly, while oiliness was independent of such gustatory substance (sucrose, sodium chloride and mono sodium gultamete), spice (mustard, pepper and ginger) and rancid flavor.

This paper has objectified the sensory terms regarding oils and fats, which has never been done in spite of the urgent requirement in various fields. The scaling and formulation of oiliness obtained in this paper, though they are not perfect, will present useful information to the field of food science and food engineering. In addition, it has proposed a methodology, which might contribute itself to the developmentof a field of food culture research.

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