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Consumer-oriented design to upgrade the palatability of functional dressings based on food "kansei" modeling

M. Kawahashi[a], A. Ise[b], H. Hashimoto[b], T. Araki[a] and Y. Sagara[a]

[a]The University of Tokyo, 1-1-1Yayoi, Bunkyo, 113-8657 Tokyo, Japan

[b]Kao Corporation Health Care Products Research Lab. No.1, Bunka 2-1-3 Sumida-ku, 131-8501 Tokyo,

Japan

aa56234@mail.ecc.u-tokyo.ac.jp

Methodologies of food kansei modeling have been developed to increase the deliciousness of dressings containing functional ingredients by utilizing the data sets obtained from the sensory evaluation of consumer preference, instrumental analysis of taste- and flavor- active compounds and operational conditions of production processes. The specified paradigm and methodology of kansei engineering for food were proposed as 'food kansei engineering' by Sagara (1994). A "food kansei model" presented as a main tool to express quantitatively the sensory communications of individuals against foods. It has been applied to correlate physicochemical properties with perceived quality of food products as well as packaging design or product information and to optimize the processing conditions for food products conforming the preference of consumer. In the application of food kansei model, the quantitative measurement of physicochemical and sensory properties of food product is necessary from the aspect of food perception and acceptance. Delicious functional foods should be newly developed to satisfy the growing demands of consumers in food preference, although conventional ones provided them with additional values in health and nutrition. In this study, several wafu (Japanese) dressings seasoned with soy sauce, including two functional ones containing "diacylglycerol"-based edible cooking oil, that are less likely to be accumulated as body fat, were selected to identify the factors influencing their palatability and to optimize their manufacturing process. Both qualitative and statistical approaches were applied to sort out the appropriate terms from totally 253 words collected by the brainstorming of several laboratory panels who tasted four 4 samples. Firstly, 67 words were selected by their frequency and validity in use. Secondary, 23 terms were objectively sorted out from those 67 words by principal component analysis(PCA), correlation coefficients, analysis of variance. Finally 7 more terms were added to the list to consider the overall variety of the wafu dressing, as a result of tasting 10 kinds of hot-selling ones. Obtained sensory evaluation scores were abstracted by PCA and estimated by the regression coefficient, while the components of samples were instrumentally analyzed using GC, GC/O as well as HPLC. The relationships among the wafu dressing components and the sensory factors were described by using "food kansei model" to optimize practical design of flavor- and taste-active components in wafu dressing. These results demonstrated to provide the consumer-oriented technology for food products.