Optimization of product odours using Flash Profiling
- Potentials and limitations -

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1. Problem formulation

Due to the high costs as well as the substantial expenditure of time of the classical Descriptive Analysis of the sensory research the Flash Profiling – which is discussed in the relevant literature since short – was used for the first time in the context of this research project.

Further Flash Profiling studies - e.g. with fruit yogurt[1], apple juice[2] or mineral waters[3] with different carbonic acid content - was published by J.M. Sieffermann (ENSIA Institute).

2. Goals of this study

The goal of the accomplished Flash Profiling study is the objective collection of the olfactory characteristics of different fabric softeners by untrained consumers. It should be examined whether almost untrained consumers are able to provide olfactory profiles of the test products and discriminate between olfactory heterogeneous products reliable and valide.

3. Test objects

The test products were eight commercial fabric softener. In each case two products had an almost identical color. The selection took place after distinction of the individual smells.

4. Flash Profiling

The Flash Profiling is a cheap and time-saving descriptive procedure. New is the collection of the olfactory perception of products. Substantial difference to the previous proceeding in the context of the descriptive analysis is the collection of the olfactory perception over similarity judgments. Thus the problem of the variability of the panelists' judgments is eliminated with the profiling of odours over intensities.

5. Test design

5.1 Descriptive Analysis

21 panelists, 5 men and 16 women between 18 and 60 years, provided odour profiles of eight commercial fabric softeners. In order to carry for the characteristics of the olfactory perception (classification, identification and intensity problem)[4] calculation, the Flash Profiling was modified concerning certain aspects.

Instead of intensities global similarity judgments were raised from the panelists. As reference for a descriptor served in each case the most typical fabric softener sample for this descriptor, whereby each participant had to decide, which of the eight fabric softeners should served as reference for the appropriate descriptor.

The illustration shows the descriptors raised individually from the panelists, which describe the fabric softener best.

Descriptors of the panelists which discriminate best between the fabric softeners		
sweet	mountain fresh	dry
parfumed	Oceanfresh	acerb
Beach/Ocean	april fresh	harmonically
bloomy	fresh	fruity

Bibliographical reference

[1] DELARUE J., SIEFFERMANN J.M. (2003): Sensory mapping using Flash profile. Comparison with a conventional descriptive method for the evaluation of the flavour of fruit dairy products; in: Food Quality and Preference, 7.6.03.

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[3] SIEFFERMANN J.M. etal. (2002): Use of discriminative and descriptive methods to characterize sensory differences among sparkling natural mineral waters with different levels of carbonation, Session 12, Sensory Evaluation: Sensory techniques - Descriptive analysis, Anaheim, California: 2002 Annual Meeting and Food Expo, 2002-06-16.

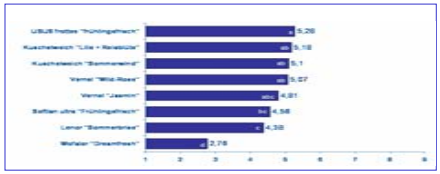
[4] MÖSLEIN R., SCHARF A., SCHUBERT B. (2004): Odour Profile Descriptive Analysis (OPDA): Ein neues Verfahren zur Beschreibung komplexer Düfte – Theoretische Grundlagen; SCHARF A. (Hrsg.): Schriftenreihe Sensory Analysis Nr. 2, Göttingen: ForschungsForum.

5.2 Affective consumer test

The results of the Flash Profiling prove however as little meaningful regarding the olfactory product optimisation. The procedure does not supply information about acceptance-driving and acceptance-restraining perception components. In order to obtain action-relevant information for marketing and product development, a linkage of the descriptive data from the Flash Profiling with affective judgments of consumers (laboratory or studio test) is necessary.

The test results of the acceptance judgments are represented in the form of mean values. The higher the value the better is the evaluation of the product. The individual mean values were compared afterwards over Post-Hoc tests. Significant differences are characterized by deviating letters, same letters refer to a statistically not significant mean value difference.

Overall acceptance odour



5.3 Multivariate data linkage

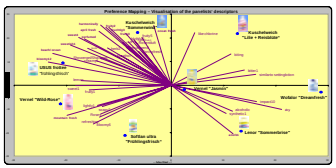
By means of multivariate linkage of the results of the Flash Profiling with the results of the affective consumer test, information about the olfactory acceptance beaters and acceptance inhibitors should be won.

6. Key findings

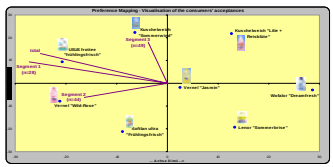
The descriptive odour profiles of the fabric softener samples raised on the basis of the Flash Profiling supply important information about the odour perception of the respondents. The softener samples can be positioned comprehensible by means of multivariate data analysis in a low dimensioned area. The Natural Grouping of the samples which is suggested in the literature and was used in the context of this research project possesses however no sufficient significance.

The results prove that the Flash Profiling is a very efficient measuring instrument for the collection of the olfactory product perception. The preparation of the data collection could be reduced clearly by the renouncement of a - otherwise usual - time intensive training of the respondents. For the profiling of eight samples two meetings are adequate (including measuring repetition), in order to supply valide and reliable results. The costs of material, performance and panelists fees move in the ballpark.

The data won by means of multivariate linkage shows itself that no generally accepted fabric softener exists. Rather segments with different acceptance judgments are identified. For these segments acceptance beating and acceptance inhibiting odour components can be determined.



The descriptors of the panelists describe the individual fabric softeners. Their positioning results from the acceptance judgments of the consumers. The closer a fabric softener is to a term, the better the term describes these fabric softener.



Due to inhomogeneous sensory preferences of the consumers (high dispersion on mean values of the total acceptance) preference segments must be identified. By means of cluster analysis the 121 consumers were divided into homogeneous subgroups. After using objective criteria (Screeplot etc.) a decision for three segments took place.

Altogether the results of the analysis occupy that the Flash Profiling is suitable, in order to supply an overview of olfactory perception structures of the users of a certain product category. Most important advantage of the Flash Profiling is the fast and cost-saving data collection. To develop new products successfully or to optimize existing olfactory products, however a specification of the used descriptors is required. Without the input of olfactory references the coverage of this task is not possible.