The olfactory perception and evaluation of herbal liqueurs using modified Flash Profiling

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1. Introduction

Since its first mention in literature, several studies[1] have proven the applicability of Flash Profiling as a fast and inexpensive Descriptive Method to get insights into the perception of foods.
In this study Flash Profiling has been applied for the first time concerning olfactory perception of food with a slightly modified approach.

2. Main objectives

The main purpose of this study was the objective acquisition of olfactory characteristics from ***eight herbal liqueurs*** through untrained persons. It had to be verified, whether widely untrained persons are able to create reliable, valid olfactory profiles and to discriminate between olfactory heterogeneous products.

3. Modified Flash Profiling

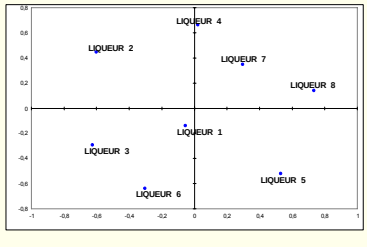
Flash Profiling is an inexpensive, time-saving descriptive procedure. The intensity of sensory descriptors has been measured descriptor-by-descriptor. In order to correspond with the characteristics of the olfactory perception (classification, identification and intensity problem)[2] the procedure was modified concerning certain aspects. The major difference to conventional Flash Profiling is the acquisition of olfactory perception by similarity comparisons instead of intensities.

4. Test design

4.1. Natural Grouping

The Natural Grouping with reference to the olfactory similarity of the samples which was made in the run-up to the study as a further comparison provides the following order of the eight liqueurs. The closer two liqueurs are arranged the more similar is the perception of their odour by grouping.

Natural Grouping – multidimensional scaling



4.2. Descriptive Analysis (modified Flash Profiling)

21 panellists, 16 women and 5 men between 20 and 50 years were chosen to provide odour profiles of the eight herbal liqueurs.

Due to the particularities in perception and processing of olfactory product information global similarities were collected instead of intensities. Therefore all panellists had to decide on their own which liqueur represents each descriptor most. This typical liqueur is reference for the appropriate descriptor. This means that product samples had to be directly compared in view of each olfactory descriptor and its reference.

The following table shows 10 descriptor segments - out of 121 descriptors raised individually from the panellists - which describe and discriminate best between the eight liqueurs.

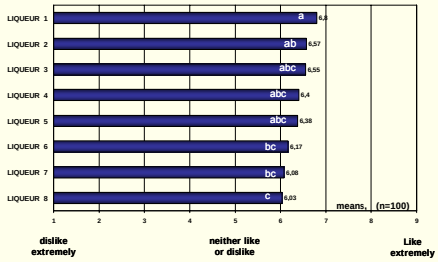
liquorice	herbal	mild/smooth	fruity	aromatic
Christmassy (gingerbread)	medicinal	tangy/sharp	fruit gum	bitter almond

4.3. Affective consumer test

The Flash Profiling procedure provides no information about impelling or inhibiting acceptance components. To gather relevant information for marketing or R&D, it is necessary to connect descriptive data from Flash Profiling with affective consumer acceptance data in laboratory tests. For these purposes a laboratory test with 100 untrained consumers who usually use herbal liqueur has been carried out. The gender splits was 75% men and 25% women. Four evenly spread age groups were built from 30-65 year-old subjects.

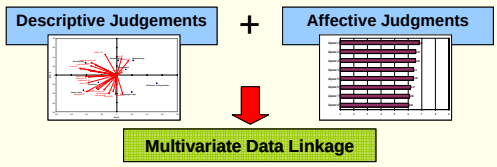
The results are shown beside in the form of mean values. The higher the value the better is the evaluation of the product. Significant differences are characterized by different letters, same letters refer to a statistically not significant mean value difference.

Odour - Overall Acceptance



4.4. Multivariate data linkage

With combining affective and descriptive data, olfactory preference drivers and preference inhibitors can be won.

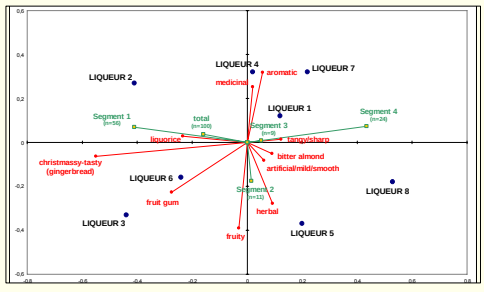


5. Key findings

The results owing to Flash Profiling procedure lead to the position of the products in a 2-dimensioned space. The closer two products are positioned in this space the more similar the products are. There are some agreements of product positions in comparison to the Natural Grouping.

The panellists' descriptors (red lines) can be added so the closer a liqueur is to a term the better the term describes it. The meaning of the data linkage requires the consumers' acceptances in the 2-dimensional space. Based on the data, no generally accepted herbal liquor was distinguished. In fact four segments had been identified (green lines). For each of the segments preference driving and preference claiming odour components can be determined.

Visualization of panellists' descriptors and consumers' acceptance



The overall acceptance and segment 1 lean towards Liqueur 2, segment 2 drifts between Liqueur 5 and 6 whereas the third and fourth segment leans towards Liqueur 1. By linking the consumer acceptances with the panellists' judgements, it has been found that the smell of liquorice and odours which provides an association to Christmas were preferred.

This study reveals Flash Profiling as a noted efficient method of gathering customer perception data. Considering all results of the research project, Flash Profiling −in combination with consumer data− can be used as a first step to develop or optimize various products. The main advantage of Flash Profiling is the fast, inexpensive way for data ascertainment.

Bibliographical Reference:

[1] DELARUE, J./ SIEFFERMANN, J.M. (2004): 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 15, Issue 4, S. 383-392.
[2] 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.