

Sensory Analysis

brewing lecture at TU-Berlin

Christopher Weyand

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Brewing is a widespread field including the scientific discipline of sensory analysis that, for the purpose of evaluating consumer products, applies principles of experimental design and statistical analysis to the use of human senses.

Contents

| | | |
|----------|-------------------------------------------------|----------|
| 1 | Main Goals | 4 |
| 2 | todo | 4 |
| 3 | Definition of Sensory Analysis | 4 |
| 4 | Sensory Perception | 4 |
| 4.1 | Gustatory Analysis | 4 |
| 4.2 | Olfactory Analysis | 5 |
| 4.3 | Tactile Analysis | 5 |
| 5 | Testing Methods | 5 |
| 5.1 | authenticity test | 5 |
| 5.2 | aversion test | 5 |
| 5.3 | blind test | 5 |
| 5.4 | branded test | 5 |
| 5.5 | descriptive testing | 6 |
| 5.6 | difference tests | 6 |
| 5.7 | duo-trio test | 6 |
| 5.8 | hedonic test | 6 |
| 5.9 | monadic test | 6 |
| 5.10 | threshold test | 6 |
| 5.11 | time intensity test | 6 |
| 5.12 | triangle test | 7 |
| 6 | Identification of the basic Flavor Types | 7 |
| 7 | Miscellaneous | 8 |
| 7.1 | Advise for relishing Brewery Products | 8 |
| 7.2 | About the Lecturer | 8 |

List of Figures

| | | |
|---|-----------------------------------------------------|---|
| 1 | intensity of sensory impression over time | 6 |
|---|-----------------------------------------------------|---|

1 Main Goals

1. Comparison
2. Description
3. Preference

2 todo

sensorik dient dazu die qualitt von lebensmitteln zu ermitteln, falls analytische meth-
oden nicht anwendbar sind der allgemeine geschmackseindruck eines biers ist von so
vielen faktoren abhngig, dass man es schwer analytisch eingrenzen kann synergistische
und berlagerungseffekte sind messtechnisch nicht gut abschtzbar oxidationsprodukte von
minorkomponenten knnen sensorisches bild beeinflussen

voraussetzungen der sensorischen analyse wahrnehmung eines geschmackseindrucks
reproduzierbarkeit um das zu erreichen bentigt es definierte bedingungen methodik
angemessen fr zielsetzung trainiertes panel -i hauptfokus der sensorik ist verbesserung
der sensibilisierung (verkostung durchgefhrte von fachleuten)

3 Definition of Sensory Analysis

A sensory evaluation is performed to detect, identify and evaluate characteristics of
products utilizing all of the sensory pathways. (olfactory, visual, gustatory, auditory,
tactile)

4 Sensory Perception

This chapter describes the human senses and their usage in sensory analysis.

4.1 Gustatory Analysis

The main flavors are:

- salty
- sweet
- bitter
- sour

4.2 Olfactory Analysis

The olfactory sense offers a direct connection to our brainstem through the trigeminal nerve. Thus the signal processing of olfactory input to our brain is not located in the cerebrum. Evolutionary smelling is the first developed sense. Like bacteria communicates with semiochemicals - called quorum sensing - animals utilize special scents to find a mate or locate their enemy. Also the olfactory vomeronasal organ found in many animals lies close to the nasal bones.

The markedness of the olfactory sense deeply depends on cultural and regional influences. An Asian might reject a Limburger cheese in disgust while a human raised in the western European countries enjoys its intense fragrance.

There is a fruit in South East Asia called *Durio zibethinus* or durian. The smell of this fruit is very intense and some would call it smelly or even describe it as the smell of rotten onions (according to Wikipedia). It's even prohibited in planes. Although Durian is a popular fruit in Asia.

4.3 Tactile Analysis

- tingling
- viscosity
- temperature

5 Testing Methods

Below follows a section about the methods of sensory testing in scientific environments. They are listed in alphabetical order.

5.1 authenticity test

Does the product meet customer expectations.

5.2 aversion test

This test is a preference test that permits just like or dislike as an answer.

5.3 blind test

The test subjects are left in the dark about the type or brand of the sample.

5.4 branded test

The branded test is the counterpart to the blind test.

5.5 descriptive testing

QDA: quantitative descriptive analysis

5.6 difference tests

Difference tests include the difference ranking test.

5.7 duo-trio test

It is to determine with which of two original samples a third sample matches.

5.8 hedonic test

Hedonic or affective tests are simple processes to determine one's preferences offering just a few options to choose from.

5.9 monadic test

The monadic test is done using just one sample and no comparison.

5.10 threshold test

//todo

5.11 time intensity test

Refers to the behavior of sensory impressions like bitter- or tartness over time as seen in figure 1.

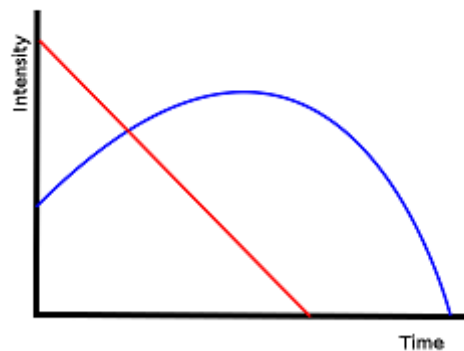


Figure 1: intensity of sensory impression over time

5.12 triangle test

//todo

6 Identification of the basic Flavor Types

sweet

4.5 g/l sugar

bitter

0,7 g/l caffeine

sour

0.4 g/l citric acid

salty

0.9 g/l sodium chloride

7 Miscellaneous

Before Sensorik you shall not:

- smoke, because nicotine is a nerve poison and the flavor substances within the smoke distort the overall gustatory perception
- eat chocolate
- use perfume
- forget to shower

7.1 Advise for relishing Brewery Products

Crispbread and water neutralizes the taste of previous samples. If there is no Crispbread in range you can also use a simple wheat bun. Also women are more sensitive to olfactory impulses. Furthermore they gustatory perceive more intense in special ways including the bitterness. This leads to aversion of bitter beer by most women. Rather useless is a sesame seed roll or something with sugar. The flavor enhancing effect of sugar leads to misinterpretations.

Waiting 20 - 30 seconds helps to regain focus and get rid of this distracting predecessor. At all cost overlay effects should be avoided. Concentration is enormously important. It enhances sensibility and prevents you from focusing on others.

7.2 About the Lecturer

bier braucht schaumkrone -j egal ob aussehen, geschmack, temperatur ... gut ist (ausser man ist am verdursten) professor hat kstrizer schwazbier entwickelt in den 90ern schwarz-bier war marktlcke gab nur guinnes und knig ludwig dunkel meinungen zu guinnes waren sehr extrem, love or hate studentenpanel zur auswertung genutzt

Link between consumer and product: consumer panel leihen kein besonderen voraussetzungen descriptive panel trainierte geschulte tester in der lage geschmackseindruck professionell wiederzugeben SA eingesetzt fr marketing und market research oder product research, development