

# **Sensory Analysis**

**brewing lecture at TU-Berlin**

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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.

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# 1 Main Goals

1. Comparison
2. Description
3. Preference

## 2 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)

## 3 Sensory Perception

### 3.1 Gustatory Analysis

The main flavors are:

- salty
- sweet
- bitter
- sour

### 3.2 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.

durian: frucht aus Südostasien wird wegen der frucht genannt, stinkende reudige frucht, in Asien beliebt, im flugzeug verboten, riecht sehr intensiv

### 3.3 Tactile Analysis

- tingling
- viscosity
- temperature

## **4 Testing Methods**

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

### **4.1 authenticity test**

Does the product meet customer expectations.

### **4.2 aversion test**

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

### **4.3 blind test**

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

### **4.4 branded test**

The branded test is the counterpart to the blind test.

### **4.5 descriptive testing**

QDA: quantitative descriptive analysis

### **4.6 difference tests**

Difference tests include the difference ranking test.

### **4.7 duo-trio test**

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

### **4.8 hedonic test**

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

### **4.9 monadic test**

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

### **4.10 threshold test**

//todo

#### 4.11 time intensity test

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

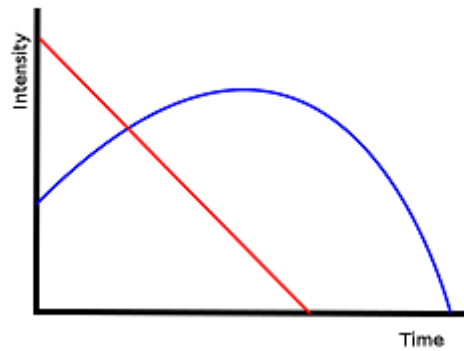


Figure 1: intensity of sensory impression over time

#### 4.12 triangle test

//todo

### 5 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

## 6 Miscellaneous

Before Sensorik you shall not:

- smoke
- eat chocolate
- use perfume
- forget to shower

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.

knckebrot zwischen verkostungen sehr gut zum neutralisieren, wasser baguette oder weizenmehlbrtchen ohne geschmacksstoffe (schlecht zb. sesambrtchen) falls kein brot min. 20-30 sec zw. proben warten, speichel sammeln berlagerungseffekte vermeiden zucker hat geschmacksverstrkende wirkung, was zu fehlinterpretationen fhren kann konzen-tration ist enorm wichtig, sensibilitt steigt mit konzentration auf die eigenen sinne nicht auf andere achten nicht rauchen, weil nicotin nerven betubt und die geschmacksstoffe im rauch den eindruck einer sensorischen analyse beeinflussen

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

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)

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