

Sensory Consistency-Testing of Special Food Products for the Quality Control*

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Consistency characteristics of food products are an important object for preparation of nourishment and for consumption forming factors which influence acceptance respectively preference or rejection of food products by consumers.

Testing and valuation of these characteristics are made for the purpose to answer following questions:

1. Which influence have consistency characteristics on maturity of consumer goods?

2. Which influence have these characteristics on sensory total quality?

The brief report will give you information about sensory testing and valuating of consistency characteristics of finished products carrying out in practice in present time by routine-control in factories as well as by state control of quality in GDR. In this case we restrict to nonliquid food products.

1. Complexity of consistency term and methodical foundations of qualitative comprehension of consistency characteristics

Standards of specific products, there is a total of 330 in the GDR for all food products, include various characteristics (called group attribute) in aspect to practical sensory testing of food products, concerning the consistence quality (figure 1).

Characteristics of food products, as for instance hardness, cohesiveness, viscosity, adhesiveness but also size and shape as well as orientation of particles, involve the quality of consistence. The characteristics can be perceived with assistance of perceptions of touching and power. One hand the panels test consistence characteristics by direct touching or by power-influence (called hand test) with assistance of a simple set of tools (for instance knife, fork and spoon). On the other hand consistence characteristics are tested by oral-perception as a part of flavour. Also informations are given about consistence by looking on the food products. Derivable from these test-methodical reasons the panel ranges the information about the quality of single consistence characteristics to following group attributes:

1. "Consistency" (results of hand-tests)
2. "Flavour" (results of oral-perception)

* A 111. Nemzetközi Élelmiszeranalitikai Módszertani Szimpóziumon elhangzott előadás. Szentendre 1975. okt. 8-11.

SCALE OF SENSORY FOAD TESTING

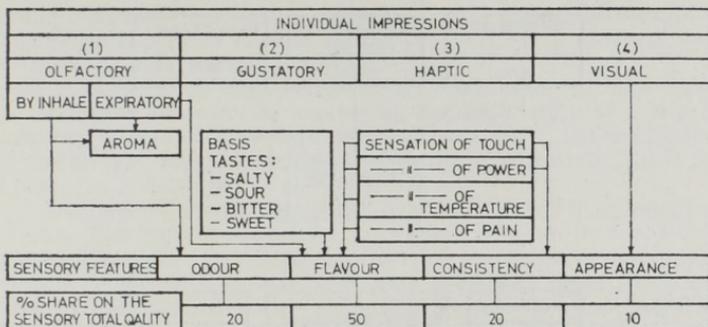


Fig. 1.

Other group attributes for comprehension of consistence characteristics are "inner state" and "structure"

In that terms the results of hand-test, oral-perception and looking on are summarized. One can find these group attributes in standards of pastry and confectionery, tinned fishes, sausages and spreadable fats.

The share of consistence-quality to the sensory total quality is an experience value, estimated by experts for the concerned standards. It involves also the habits of consumers. That share runs to 12.5% till maximum 50% for non-liquid food products taking into consideration of well defined consistence characteristics.

Some figures for other foods well defined consistence characteristics:

Jam	12.5%
Spreadable fats	25%
Curd, cheese 20 till	25%
Tinned fishes	25%
Sausages	25%
Confectionary and Pastry	
17.5 till	20%
Mashed potatoes	25%

For bread the share runs to 45% (figure 2). Here on can notice the sub division of the characteristic "flavour" to "mastication" and "aroma". Consistence-quality takes to the characteristics of three group attributes following

1. Crust-quality (hand test and looking on)
2. Crumb-formation, porosity (hand test and looking on)
3. Mastication (oral-perception)

In elaborating standards of sensory product-testing it is necessary 1. to use informations, received by profil-analyses for example and 2. to pay attention to the principle of using only well defined characteristics to assign only to one attribute in order to prevent parallelism and thus double valuation.

SENSORY EVALUATION OF BREAD

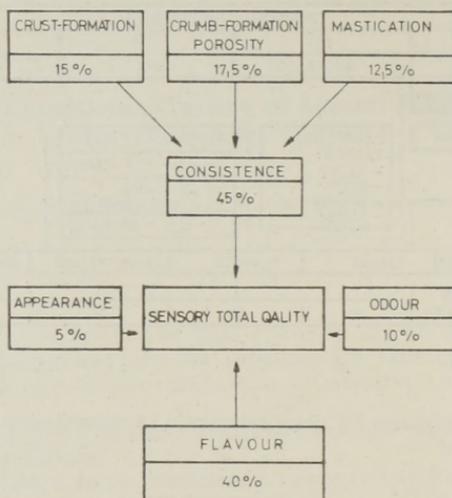


Fig. 2.

Table 1.

General characterization of the evaluation grades
(to all features)

Evaluation-grade (not appreciated* score)	Evaluation principles
5	Special marked positive attributes, without faults/defects
4	Insignificant faults/defects, value of taking barely impaired
3	Faults/defects as far as they don't fall below standardized minimum of quality
2	Faults/defects as far as they fall below standardized minimum of quality, but still good for taking
1	Important faults/defects, not proficient for the purpose of determination, but not spoilt
0	Faults as far as it is to view like spoilt

* Synonymous unweighted.

2. Consistence testing with 6-scale-valuation

Mechano-reception and depth sensibility as modalities of somato-visceral sensibility can be compared in their efficiency, with every different sense modality, for instance with odour or looking.

Therefore consistence characteristics of food products are tested and valued as for odour, flavour and looking on the foundation of a standardized 6-scale-valuation within of a 20-point system in the GDR. On the basis of such standards the sensory routine-testing of products is carried out (Table 1).

The principle is following.

Every attribute is describing valued by means of a 6-scale valuation with popular terms. The highest scale-value is 5 point and can be reached by that sample having all positive desirable attributes of maximum intensity and being without faults. Wanting of positive desirable attributes respectively existence of negative undesirable attributes show a graduate lower unweightes scale-value in dependence of the extent. For the successfull application of that method it is very important for the panel to have big practical experience of product-testing but knowledge in product-manufacturing, mercantile technology and storage conditions to.

Table 2.

Bread, mastication

Unweigh- ted score	Attributes
5	Very easy soluble, full irreproachable crushable
4	Still easy soluble, still irreproachable crushable
3	Insignificant agglomerating, some crumbly, some slack-baked, slight reduced solubility
2	Agglomerating, reduced solubility, hard crushable, crumbly, slack-baked, some sandy
1	Very reduced solubility, respectively insoluble

Table 3.

Crisp bread, inner state

Unweigh- ted score	Attributes
5	Good crisp, regular structure, easy resisting break
4	Good crisp, some irregular structure, easy resisting break
3	Some compact, some pappy, rough structure
2	Too compact, too pappy, strong growth of cavity
1	Viscous, hard

Crisp bread, taste

Unweighted score	Attributes
5	Full-aromatic, spicy, very easy soluble
4	Aromatic, pure, easy soluble
3	Weak aromatic, not complete pure, some reduced solubility
2	Inexpressive, impure, bitter, strong reduced solubility
1	Mouldy, impure, strong bitter
0	Spoiled

Table 5.

Chocolate, inner state

Unweighted score	Attributes
5	Irreproachable break, symmetrical compact structure, without cavities, refined melt and cut
4	Some unsymmetrical break, some hard melting, not complete refined cut, some rough cut
3	Unsymmetrical break, hard melting, rough cut
2	Rough unsymmetrical break, sandy
1	Too soft strong sandy
0	With contaminations

Following five examples give a view on the 6-scale-valuation of consistence testing.

The mastication of bread (Table 2) results from a very good solubility and are valued with 5 points. Possible faults are: crumbly, slack-blaked, sandy.

One can see at the example "crisp bread" (Table 3) the valuation of consistence within "inner state" with such attributes as "crisp", "break", "viscosity" and "hardness" as well as also within "flavour" (Table 4) with the attribute "solubility".

The testing of "inner state" of chocolate (Table 5) comprehends "break", "melt and cut". The scale "0" is given, if there are contaminations in the chocolate. In that case the total quality of the products is valued with "0" point.

The testing of "inner state" of fresh sausage (Table 6) takes into consideration such faults as "rough sinews", "cartilage" and "pappy consistence".

Fresh sausage, fine quality inner state

Unweigh- ted score	Attributes
5	Specifically, some porous, refined spreadable substance, fine cut, homogeneous
4	Insignificant deviation of consistence, porous
3	Some rough substance
2	Single bone-splinters, parts of cartilage, substance too rough
1	Strong deviations of consistence, strong dry edge, strong deviated granulation, great portion of rough sinews, glandular parts, blood-stained meat, very great portion of rind mixture, bone-splinters, cartilages
0	Pappy consistence

Table 7.

Spreadable fat, structure

Unweigh: ted score	Attributes	
	ware in cups	ware in cubs and blocks
5	Cutable, pliable, regular dissolving in the mouth	
4	Faint viscous; however with constant shape	
3	Mealy, faint sticky	Hard, yet not crumbly, mealy, faint sticky
2	Viscous, yet with constant shape, sandy, viscid	Viscous, yet with constant shape, sandy, viscid
1	Not yet with constant shape	

The scale-valuation of "structure" of spreadable fat (Table 7) shows clear the combination of the hand-test and the oral perception at the example "regular dissolving in the mouth".

The application of the 6-scale-valuation for the practice till now proves the possibility to obtain useful information about quality level of food products. By our hither to existing experiences the possibility of instrumental-analytical testing of consistence characteristics is limited to scientific fields. Because of the complexity of testing products there are in the rule strictly limits for wide application. Therefore the panel activity in the routine control will be dominated in the next future.

An objectivity of consistence testing is necessary and has to go into three directions:

1. Improved qualification of panels analogous to odour- and taste-testing performing considerable more exact.

2. Investigation of correlations to instrumental-analytical examination results and to different sensory characteristics with the aim the number of valuable characteristics to reduce by presence of a high degree of correlation.

3. Investigation of mathematical-statistical significant weighting factors involving the expectation of consumers improving the information value about the investigated total quality.

ÉLELMISZEREK KONZISZTENCIÁJÁNAK VIZSGÁLATA ÉRZÉKSZERVI ÚTON ÉS SZEREPE A MINŐSÉG ELBÍRÁLÁSÁBAN

Neumann R.

Az érzékszervi úton történő konzisztenciavizsgálat általános jelentőségét és szerepét a minősítésben taglalja a szerző. Részletesen ismertetésre kerül a hatos skála szerint történő érzékszervi minősítés módszere. Utóbbit kenyérféleségek, csokoládé, tölteléken húsáru és szilárd zsiradék példáján mutatja be a szerző.

ОРГАНОЛЕНТИЧЕСКОЕ ИССЛЕДОВАНИЕ КОНСИСТЕНЦИИ ПРОДУКТОВ ПИТАНИЯ И РОЛЬ ЕГО В ОЦЕНКЕ КАЧЕСТВА

Р. Неуманн

Значение и роль исследования консистенции путем органолептической оценки автор обсуждает пищевые продукты по качественной оценке. Подробное ознакомление требует метод органолептической оценки проводимой по 6-ти баллам. Последнее автор знакомит по примеру хлебопродуктов, шоколад, колбасных изделий и твердых жиров.

UNTERSUCHUNG DER KONSISTENZ VON LEBENSMITTELN AUF SENSORISCHEM WEG UND IHRE ROLLE BEI DER QUALITÄTSBEURTEILUNG

R. Neumann

Die allgemeine Bedeutung und Rolle bei der Qualitätsbeurteilung der sensorisch durchgeführten Konsistenzuntersuchung werden besprochen. Dabei wird das nach der Sechsserskala durchgeführte System der sensorischen Qualitätsbeurteilung ausführlich beschrieben. Dieses System wird durch verschiedene Beispiele (Brotvarietäten, Schokolade, gefüllte Fleischwaren und Festfett) näher erläutert.