

INTRINSIC QUALITY CHARACTERISTICS OF SOME FOODS PRODUCTS

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Abstract: Food has a very important place among man's life elements, making up a complex system with the role of feeding and maintaining health. That is why certain food characteristics are standardized, being established maximum and minimum limits within these has to be, so that consumer's life and health should not be affected and he/she should be sure that the product corresponds to the requested quality.

Studying the intrinsic quality characteristics of food products a great importance for all the aspects referring to food quality maintenance through the whole technical and economical circuit this goes over.

Cereals, basic products in man's nourishment, have special sensorial qualities, high amounts of glucides, found as starch, vegetal proteins and a low percentage of none/assimilable substances. They have a high technological potential, being processed in different ways. Because of low water content, they can be easily preserved for a long period of time.

The main intrinsic quality characteristics of cereals refer both to the sensorial ones, which must be in accordance with the sort and type, and to the physical and chemical ones such as: hectolitre mass, wet gluten, gluten index, vitrescence in section, humidity. Depending on the values of these characteristics cereals are divided into different quality categories.

The amount of gluten (at wheat) shows the cereals destination (for milling, for bakery, etc., and it has to be between 22% (for bakery wheat) and 28% (for the wheat for pastes). The more the wet gluten is situated towards the maximum limit, the more the flour obtained from that wheat is easier to be shaped, and, therefore, the wheat can be used in producing macaroni.

The wheat vitrescence is also a quality characteristic that shows the rate in which the wheat is used for bakery (30% min. vitrescence) or for bakery and pastry (60% min. vitrescence).

One of the most important intrinsic quality characteristics of cereals is humidity which must not be more than 14% for wheat and 15% for all the other cereals, because, while being deposited they get hot and become unsuitable for consumption.

The hectolitre weight of the cereals must be between 70-75 for wheat and 45-65 for rice. In order to be framed in superior quality categories, the uniformity of the grains seeds should be over 90%.

By basic processing of cereals, it results the croups, special treatments being applied so that the embryo be eliminated. For grits, tore, the quality is appreciated by taking into account both the sensorial qualities (appearance – uniform, colour – specific to the sort, smell – typical, no mould smell, taste – typical for the sort, no strange taste) and the physical – chemical ones: amount of water, acidity, the entire

ashes, granulation and the iron percentage which remains from the milling installations. In order to define the grits quality, some characteristics should be thought of: boiling time, the volume increase, changes while boiling, but these are not standardized. The grits are divided into categories by taking into account its sensorial and physical-chemical qualities and its granulation. Humidity for the products in subgroup croups should be as that for the cereals they come from, meaning 14,5%. The content of insoluble ashes in HCl 10%, shows the content of impurities and this must not be over 0,2% - 0,5% on grits. No infestation with insects or acarians is admitted.

Types of flour, products obtained by milling bread cereals and other non – bread cereals, are different one from another by flour degree extraction the amount of flour obtained from 100 kg of wheat. Between the flour extraction degree and the flour ashes content there is a direct proportional relationship, meaning that the higher the extraction degree is, the bigger the ashes content is.

Table 1

Ashes content of different type of flour

Type of flour	Ashes content
Flour 000	0,48%
White flour 650	0,65%
White flour 550	0,55%
White flour 480	0,48%
Half-white flour 650	0,80-0,90%
Brown flour 1250	1,25%
Brown flour 1350	0,35%
Diet flour	0,75%
Graham flour	2,20%

Source: Data from flour standards

Another important characteristic of the flour is acidity, which is higher when the flour is browner.

Table 2

Acidity of different type of flour

Type of flour	Acidity
White flour	2,2
Half-white flour 650	2,8-3
Brown flour 1250	3,8
Brown flour 1350	4
Diet flour	5
Graham flour	4

Source: Data from cereals standards

Depending on the wet gluten content, flour can be used for pastry products (000 flour – 30% wet gluten, white flour 680 – 26%), bakery products (white flour 480 – 24%, diet flour – 22, graham 20%, brown flour – 29% half – white flour 28%) and other products.

The content of insoluble ashes in HCl 10% indicates the impurities which are found in flour and that is why it must not be over 0,2% maximum.

Humidity must be around the limit of 14,1% just as for cereals, types of flour with a humidity higher than that being improper to be deposited, because they go bad easily.

For white types of flour the protean substances content reported to dry substance is pretty little (9,5%), for diet and graham flour is 7%, and for brown and half – white ones is 10,5%.

Gluten deform index must be between 5 and 12 mm. Gluten quality and extraction degree establish the hydration capacity, meaning the water quantity (%) which is absorbed by the flour in order to form a normal dough. Good and very good types of flour have a hydration capacity of 54% to 60%.

Bakery products, another group of products obtained by processing the flour, are divided, according to the way of the dough breaking up, in bakery products biologically broken up, with yeast, and bakery products chemically broken up.

Depending on the type of flour, one can obtain different sorts of bread: with, half – with, brown, diet, and graham bread and, depending on the things added, different specialties.

The quality of bakery products biologically broken up is given by sensorial characteristics: shape (specific to the type of the product, non – flat excepting for the flat loaves of bread), surface status, color, the aspect of the crust and core, core resilience, uniformity and distribution of pores, smell, taste, absence of defaults and diseases. Among the physical and chemical characteristics one should be interested in the porosity of the core, acidity, core resilience, volume, salt content and insoluble ashes in HCl.

The core water content varies among 45% for white bread, 47% for half-white bread, 48% for brown and diet bread.

The core porosity, another quality characteristic for bread has values among 73% for white bread, 65% for half – white bread, 60% for diet and brown bread and 55% for graham bread.

The whiter the flour, the higher the porosity is and the fluffier core. This is obvious that the core resilience is direct proportional with the porosity: 93 for white bread and 80 for brown bread.

The acidity gets higher when the flour degree extraction is lower: 3.5 for white bread, 4.5 for half – white bread, 6.5 for diet and brown bread and 3.5 for graham bread.

The salt content (NaCl) in % max. is among 1.3 for white bread, 1.4 for half white bread and 1.5 for the brown one.

Diet bread is produced without NaCl.

The insoluble ashes in HCl 10% will be, as for cereals, of maximum 0.2%, excepting diet bread where it must not exist.

Chemically broken – up bakery products are characterized by a reduced water content, by a relatively high fat and sugar content and a high energetic value. As chemical broken up substances, baking soda, ammonium soda, ammonium chloride are used.

The flour used for making biscuits is of wheat with gluten content of maximum 30% so that these should be soft and unbreakable. The flour granulation differs according to the type of biscuits, meaning it is refined for gluten biscuits and with bigger granules for the sweet ones and cookies in order to influence in a positive way the aspect and the taste.

A first indicator of the quality of the biscuits is the water content which is between 5-6% for sweet biscuits and crackers, 8% for gluten, glazed and stuffed biscuits and 10% for cookies.

The whole sugar content reported to the dry substance is also according to the type of biscuits, varying between 4-6% for crackers, 8-18% for gluten biscuits 10-25% for sweet ones and 18-30% for glazed and stuffed ones.

The fat content reported to the dry substance is also between 8-12% for gluten biscuits 12-20% for cookies and sweet biscuits and 18-25% for all the other types.

The alkalinity of the biscuits can be measured in maximum degrees and has to be 2 for all types of biscuits.

Another group of studied products is Milk and dairy products. Milk chemical composition is different depending on the animal species and race, on the alimentation, the nursing status, season, etc.

Among the physical and chemical milk characteristics one should be interested in the fat content, % which is different from one species to mother, acidity, water + dry substance of which: dry substance (non fat), delivery temperature, °C, max. and among microbiological qualities: the presence of *Escherichia coli* for one gram of product, coli-form bacteria for one gram of product max, *staphylococcus* that coagulate positively for one gram of product, max, yeasts and moulds for one gram of product, max. and *Salmonella* for 50 grams of product.

Milk sensorial characteristics have a great importance in appreciating the milk quality and they are: the aspect (homogenous, with no impurities and sediments), color, (white, yellowish), depending on the species of the animal, specific taste and smell, with no strange taste and smell.

One of the most important physical and chemical characteristics of the milk is relative density which varies depending on the species, race, food, but also according to the fat content. The relative density at 20 °C is: 1.029 for the cow and goat milk, 1.031 for the buffalo cow and 1.033 for sheep milk the values depend on the non fat dry substance content and are reversely proportional with the fat content.

The milk acidity is expressed in Thörner degrees and is between 15 - ...19 OT for cow and goat milk, 21 OT for buffalo cow milk and 24 OT for sheep milk. This quality indicates the milk freshness degree, this is an important quality characteristic.

Fat milk content in % is 3.2% for cow milk, 3.3% for goat milk and 6.5% for buffalo cow and sheep milk, a lower fat content showing the presence of water in milk (for raw milk).

Milk pH (active acidity) is between 6.3 ... 6.9, being known that milk is a food product weak in acids.

At milk, checking reaction for pasteurization must be negative, reaction which indicates the presence of the phosphatase and of peroxidases.

Among dairy products there is butter, yoghurt various kinds of cheese.

The butter, a product which has a great amount of fats contains in a concentrated form, the fat of the milk which can be easily assimilated. Depending on the fat content and sensorial characteristics, butter is put on the market in three sorts: extra, 83% fats, superior 80% fats and normal butter 78% fats.

Among the physical and chemical characteristics of the butter, except the fat content, there also are acidity (between 2 OT – 2.8 OT depending on the butter sort), checking reaction for cream pasteurization and Kreis reaction for the freshness degree, which has to be negative.

The different kinds of cheese vary depending on the milk used in obtaining them of cow, of sheep, of goat buffalo cow or of a mixture of milk from different species. They can also be classified depending on the fat content (double cremes, very fat, fat, half-fat, thin, with no fats, with a fat content from 10% to 60%) and on the consistency of the paste in cheese with soft paste, half-hard, hard and kneaded cheese.

Among physical and chemical quality cheese characteristics, there are: the minimum dry substance which has to be 55-56 for fermented cheese with half-hard paste, 55-64% for the ones with hard paste 35-45% for the ones with soft paste and 45% for the melted cheese.

The fat reported to the dry substance has to be of minimum 45-50% for the hard paste fermented cheese 40-48% for the ones with half-hard paste, 15-27% for the thin and half-fat cheese, 30-35% for the kneaded cheese, 30-60% for the melted cheese and 45-46% for the cacciocavallo.

The cheese can contain some tracks of heavy metals, during processing with technological equipment. The content of heavy metals must no overcome the following values.

Table 3

Content in heavy metals

Heavy Metals	Content
Copper	0.5 mg/kg
Lead	0.5 mg/kg
Tin	10 mg/kg
Arsenic	0.2 mg/kg

Source: Cheese standards

All the products, in order to be of good quality must not have shape, color, consistency taste and smell defaults or insect – caused defaults.

Meat is a basic food with a high biological value and special sensorial qualities. The meat qualities divided into a number of categories, depending on the on the part of the body where it comes from. Before making the physical and chemical analyzing the aspect, the color on the surface and in section the consistency, the swell if it is specific, the taste. The natural fat of the meat is also analyzed, both as aspect and swell.

Among the physical and chemical qualities, one should be interested in ph, which is ≤ 6.2 for fresh meat and > 6.4 for altered meat, easily hydrolysable nitrogen which must not be higher than 35 mg NH₃ / 100 grams Kreiss reaction if at is negative / being positive means altered meat / the reaction for hydrogen sulphide and the reaction for ammonium identification / Nessler reactive reaction.

Meat products are the ones obtained from meat as basic substance, together with land, eatable sub-products, vegetable grits, etc. The same quality characteristics as for the meat are observed, and we are also interested in water content fat, proteins, NaCl and nitrites content.

The vegetables and the fruit, vegetal foods are used in nourishment, both fresh and cooked or preserved. They are natural products with a high amount of water though perishable, with a validity date, generally short.

They are a natural product with a high amount of water though perishable, with a validity date generally short. For appreciating the quality of vegetables and fruits there are considered the shape, the size, the colour the aspects of peel and of the pulp, the consistency of the pulp, the taste, the juiciness and aroma.

The vegetables and fruits cans are studied by a sensorial and also from the physical and chemical properties points of view, the pH, the acidity and the content of NaCl – at vegetables and soluble substance expressed in refractometrical degrees, acidity expressed in malic acid, insoluble ash in HCl at fruit.

The vegetables and fruit are classified taking into consideration the aspect, the size, the shape, the colour, the pulp's consistency, the freshness and also the state of health and cleanness etc.

The wine, mild alcoholic drink differ from the point of view of quality, taking into consideration the breed of grapes, the period of picking, the climate etc. The amount of sugar in wine determines the classification of qualitative wine into dry, half dry, half sweet, and sweet wine, containing from 4g/l to 50g/l sugar (4,0 g/l la at dry wine, 4,1 – 12,0 g/l at half dry wine, 12,1 – 50 g/l at half sweet wine and over 50,1 g/l at sweet wine.

Table 4

Amount of sugar to different type of wine

Type of wine	Amount of sugar
Dry	>4,0 g/l
Half dry	4,01 – 12,0 g/l
Half sweet	12,1 – 50,0 g/l
Sweet	< 50,01 g/l

Source: wine standards

Besides the amount of sugar, from the chemical properties written in the standard which influence the quality of wine, we remember the alcoholic strength at 20⁰ C, % vol., which considering the type of wine is between 8,5 % vol. and 11,5% vol., total acidity expressed in CH₃COH (acid acetic) (1,08 at white and rose wine and 1,20 at red wine), the dry reducing extract from 15 g/l to 23g/l considering the type of wine and not ignoring total SO₂, which can be found in limits of 160 g/l - 350 g/l, (160g/l at red dry wine, 210g/l at white and rose half dry wine, 300g/l at sweet and half sweet wine and 350 g/l at wine made from overripe grapes), full of sugar and oxidazical enzymes.

These properties of the alimentary products are important in the scope of establishing the degree of freshness and the measure of classifying the quality level of products.

Any exception to the value rules of these of characteristics can indicate an unsuitable quality of defect.

As regarding EU and the trade on its territory, an essential principle of the Common Market is a represented by the free circulation of industrial and agricultural products.

For that it was agreed that the circulation of products has to be liberalised and it was initiated with the establishment of the custom's union and the cancelling of any other obstacles, generically called non – tariff barriers. Between all these, there are technical, financial, administrative barriers and the technical barriers mainly refer the standards.

The standards and the technical norms became technical barrier in trade only if they are different from a country to another and if they are not recognized by other countries. As a result, the external market is smaller or wider, the access is cheaper or more expensive and in accordance with the type of barriers.

The ways of overcoming these barriers which result from the existence of some different standards in some countries are either establishing common standards or promoting the mutual recognizing of standards.

From the legal point of view, standards are compulsory only in few cases, but they adoption and obeying makes the export easier as it proves the conformity of the product with an already recognized an accepted quality of goods.

As a consequence, the standards become “compulsory” for the commercial points of view. This proves that the company also introduced the management of the quality system which also demonstrates how the company operates in this field: how the quality of the design production, installation, service, control and testing are provided. The system has to be accredited by the recognized body of accreditation and registration. In many cases, these organisms will proceed to periodical reaccreditations of the system. This explains why the adoption of the international standards ISO series 9000/2001 is recommended and also their subsections.

The Rome Treaty regarding the technical barriers refers to harmonizing the legislation, which means the elaboration and imposing of European norms and standards.

To sell alimentary products in the EU, the non-member states have to creates national structures of authorization and certification which prove that the goods offered to the market respond to the communitarian criteria regarding quality, security and inoquity.

In the frame of “new approaching” regarding the harmonization of the conditions which the products have to obey, only the essential requirements as the security level for protecting the customers’ health/environment have to be harmonized at the communitarian level. To cancel the banning to import of the products which did not correspond to some national prescriptions but which obeyed the communitarian norms regarding customer health/environmental protection, a principle of mutual recognition of standards was adopted.

A special importance is granted to the standardizing of perishable products. The EEC/UNO standards for perishable products represent a harmonization of the current national standards.

The standards of the Economic European Commission, which refer especially to fresh fruits and vegetables, are elaborated in the spirit of the other bodies by “The Work Group for Standardization of Perishable Products”. They have as structural elements the following: the naming of the standard; the definition of the products; dispositions concerning quality: the sanitary state, cleanness, aspect, humidity, the absence of bad smell or aroma, the developmental or maturity state which has to provide the product the resistance to transport and deposit until reaching the destination; dispositions regarding calibration/measurement; for those which can be subject, it is determined if it is the case the diameter, circumference, length, mass; for the others, figure of pieces/kg, number of pieces in a certain cover etc., dispositions regarding tolerance; presentation.

The European standards, sometimes considered harmonized standards, have to be compulsory undertaken by the collections of national standards. These standards substitute to the national standards with the same subject, even if this thing doesn’t apply for other standards with an international character (e.g. the ISO ones).

Until the present, CEN activated very little in the agro-alimentary domain, where nowadays there are only four technical committees.

In spite of the fact that at the alimentary products it is experienced the harmonization of the Romanian standards firms still use old standards of products, no updates.

This is not strange as not even ASRO hasn't revised all the quality standards of the alimentary products; the analyses standards too. Very old and non-actual standards from the '50, '60, and '70 are still used.

It is sure that the proprieties and the characteristics of the products are the same but due scientific research and technicity, there were established limits of the quality characteristics slightly different from those existent in those periods.

Taking into consideration the fact that the standards from the majority of E.U. countries have very similar values of the intrinsic characteristics of the alimentary products; this fact needs special attention and the quality standards have to be totally harmonized and obeyed.

This fact would make the production and trading of these products easier, would enhance the traders' and customers' trust and indeed would lead to improving and rising the quality of life.

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