Beatrix KUTI[1,2], Márta HORACSEK[3], Dávid SZAKOS[4,5], Gyula KASZA[2,5]

DOI: https://doi.org/10.52091/JFI/2021/1-2-ENG

Received: November 2020 – Accepted: January 2021

Regulation of nutrition labeling of foods in the European Union and Hungary; A historical review from the beginning to the present day

Kulcsszavak: Food labeling, nutrition labeling, voluntary labeling, mandatory labeling, Codex Alimentarius Commission, harmonization of food law, Big 8, Big 4, Traffic light, Battery, Nordic Keyhole, Nutri Score, GDA (Guideline Daily Amount)

1. SUMMARY

Food labeling is one of the most diverse areas of food law, and special attention is paid to nutrition labeling within this area. This is not a coincidence, as modern nutrition science is evolving year by year, and legal changes must also keep pace with this. Nutrition labeling is particularly important for those who struggle with obesity or certain metabolic diseases or have special nutritional needs for other reasons. In a somewhat unusual way, the regulation of nutrition labeling has not appeared primarily in regulations at the national level, but its development began within an international framework, with the first breakthrough being the Codex Alimentarius and the expert work carried out within it. Hungary has been participating in this work since the beginning, so the Hungarian regulation, regardless of historical periods, has been relatively harmonized with the current best labeling practices in the world, with complete harmonization taking place by the time Hungary was on the verge of joining the European Union. In this study, we look back at the most important international, EU and Hungarian steps in the development of the regulation, not only presenting legal changes, but also comparing them to the changing requirements of the various periods. In addition to the current regulatory environment and challenges for nutrition labeling, key voluntary labeling schemes are also included in this communication.

[1] Ministry of Agriculture, Department of Food Economics and Quality Policy
[2] Hungarian University of Agriculture and Life Sciences
[3] National Institute of Pharmacy and Nutrition
[4] University of Veterinary Medicine
[5] National Food Chain Safety Office, Directorate for Risk Management

Dávid SZAKOS	szakos.david@univet.hu	https://orcid.org/0000-0002-0280-0090
Gyula KASZA Dr.	kaszagy@nebih.gov.hu	https://orcid.org/0000-0003-3120-2820
Beatrix KUTI	beatrix.kuti@hotmail.com	https://orcid.org/0000-0002-5876-2708
Márta HORACSEK Dr.	horacsek.marta@ogyei.gov.hu	https://orcid.org/0000-0001-5608-4790

2. Introduction

At the international level, the cornerstone of nutrition labeling decree was laid in 1985 by the Codex Alimentarius established by the FAO/WHO, in the form of a guide to nutrition labeling. Nutrition labeling decree was based both in the European Union and Hungary on the Codex Alimentarius ***(Figure 1)***.

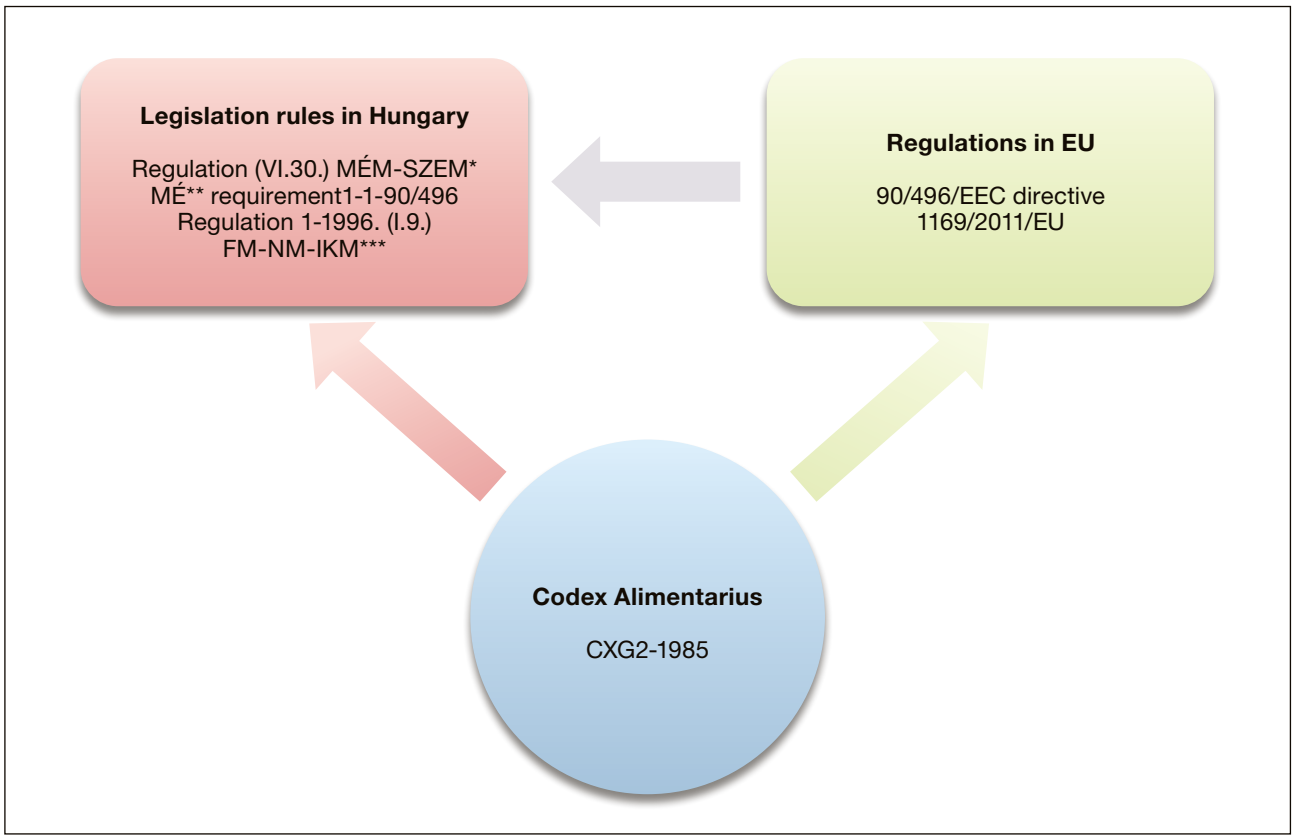


Figure 1. Regulatory relationships of the nutrition labeling of foods

* *MÉM-SZEM: former Ministry of Agriculture and Food – former Ministry of Social Affairs and Health*
** *MÉ: Codex Alimentarius Hungaricus*
*** *FM-NM-IKM: former Ministry of Agriculture – former Ministry of Public Health – former Ministry of Industry and Trade*

Nutrition labeling was first regulated by the Council of the European Community in 1990 with the adoption of Directive 90/496/EEC. Compliance with the directive was voluntary and it applied to all foods intended for normal public consumption (***Figure 2***).

In Hungary, indicating the "essential" elements of nutrition labeling of foods was voluntary until the mid-1970s and 1980s, then, from 1988, indication of the energy content became mandatory. From 1996, rules for the nutrition labeling of foods had been defined by the Hungarian Food Codex (Codex Alimetarius Hungaricus), with a definite content but still on a voluntary basis **[1]**, and this remained in force until December 13, 2014.

Prior to December 13, 2014, nutrition labeling was a mandatory element on the packaging only if the manufacturer, using today's regulatory terminology, made a nutrition or health claim, or such a claim was published in relation to the product, or if it was a food for people with special nutritional needs (e.g., baby food) **[2].**

In the meantime, more and more countries have introduced mandatory nutrition labeling at the international level, mainly for public health purposes, in order to reduce obesity and to prevent certain chronic diseases **[3]**. Recognizing the growing public interest in the link between the diet and health **[4]** and also because solutions were needed to the health challenges related to overweightness and obesity **[5, 6]**, it has become clear that the creation of harmonized rules at the EU level was urgent and essential to ensure adequate consumer information. In light of this, Regulation (EU) No 1169/2011 on the provision of food information to consumers was adopted, which defines the general principles, requirements and obligations for the labeling of foods, and also makes it mandatory to indicate the nutrient content of foods. The primary purpose of nutrition labeling is to provide information to consumers about the nutritional composition of foods, helping them to make informed decisions **[7]**.

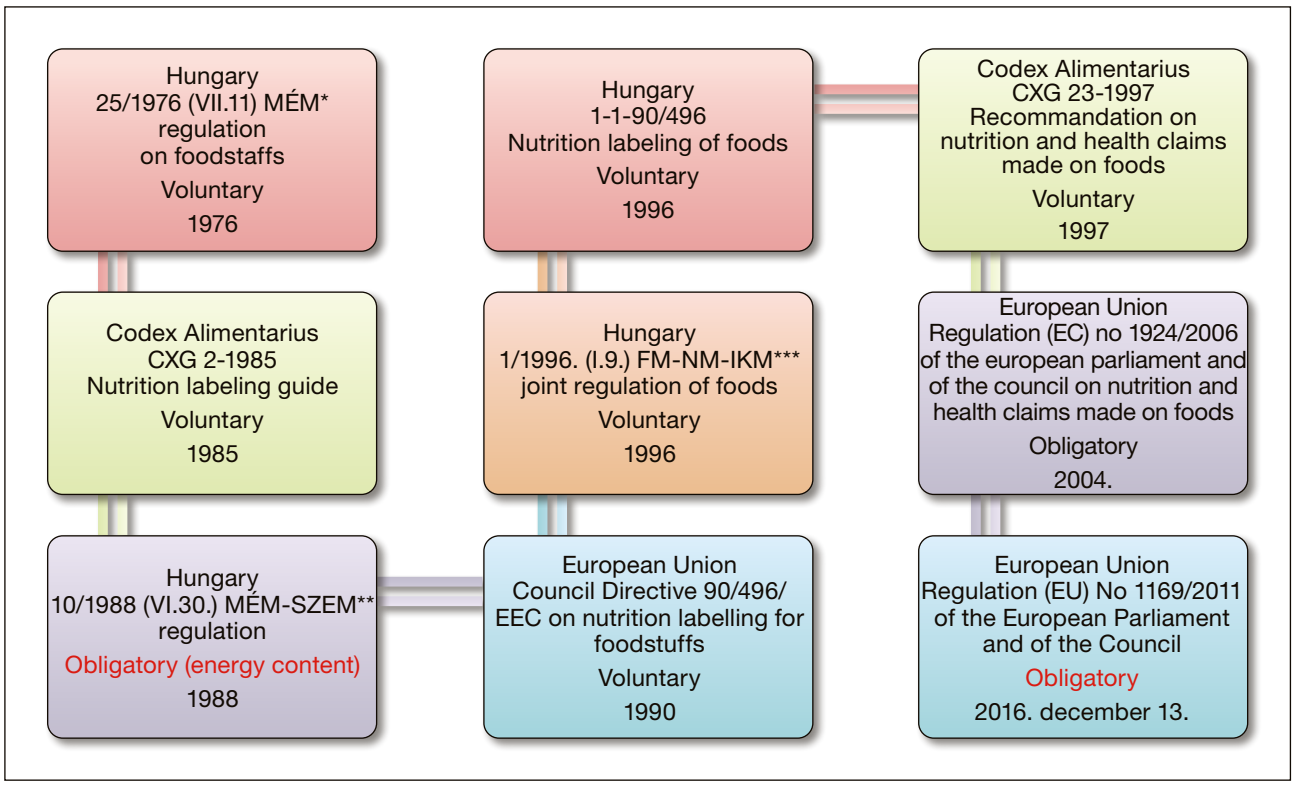


Figure 2. Chronological summary of laws governing labeling of nutrition value

* *MÉM: former Ministry of Agriculture and Food*
** *MÉM-SZEM: former Ministry of Agriculture and Food – former Ministry of Social Affairs and Health*
*** *FM-NM-IKM: former Ministry of Agriculture – former Ministry of Public Health – former Ministry of Industry and Trade*

Of course, food labeling alone is not enough. In order for information to achieve its purpose, it is also necessary to motivate consumers and for them to know the principles of good nutrition. Education and informing consumers for educational purposes are indispensable for consumers to better understand food information and thus incorporate the given foods correctly into their own diets **[8, 9, 10, 11, 12, 13, 14].**

In this article, the development of the European Union and Hungarian regulations regarding the nutrition labeling of foods intended for normal public consumption are described, as well as the related practices and experiences. Due to the complexity of the topic, laws on foods for special dietary uses and on foods containing claims are not discussed in detail in this publication.

3. Nutrition labeling at the international level (Codex Alimentarius)

3.1. Operation and purpose of the Codex Alimentarius Commission

The main purpose of the Codex Alimentarius Commission (hereinafter referred to as the: Codex), operating within the framework of the specialized agencies of the United Nations FAO and WHO, is to develop food standards, guidelines and other related documents in order to achieve global harmonization, which also facilitates international trade. Behind all this is the protection of consumer health and also the establishment of fair practices in the food chain. It can be said that the Codex seeks international agreement and therefore shows suitable flexibility. It allows individual countries to incorporate Codex standards and guidelines into their own laws and recommendations. This is also the case with the Codex guideline on nutrition labeling. The Codex operates within the framework of committees specialized for certain areas, and the documents drawn up and adopted by it are finalized with the approval of the main committee **[15, 16]**.

3.2. The Codex and nutrition labeling

With regard to nutrition labeling, two specialized committees play key roles, one of which is the Codex Committee on Nutrition and Foods for Special Dietary Uses (CCNFSDU) which, through its activities in this field, contributes, among other things, to the enforcement of scientific and professional basis and to the determination of dietary intake reference values. The other such specialized committee is the Codex Committee for Food Labelling (CCFL), which finalizes the information on nutrient composition related to food labeling in this area. A guide on nutrition and health claims has been developed within the framework of a similar collaboration. One of the objectives of the guidelines is to provide consumers with an understanding of the labels on the products and to provide them with sufficiently detailed information **[17].**

The basic requirements for nutrition labeling were first defined in guideline CXG 2-1985 in 1985 as a voluntary labeling element (except for food intended for specific groups, for which nutrition labeling was already mandatory at that time and was regulated by a separate standard that is CODEX STAN 146-1985), which applied to both prepacked and non-prepacked foods. The guideline is still being developed and refined to this day, and in this spirit there have been complete revisions in 1993 and 2011, and nine amendments between 2003 and 2017. Initially, nutrition labeling was voluntary, however, with a modification in 2012, it became mandatory for prepacked foods. In 2011, an annex defining the general principles of the Nutrient Reference Values (NRVs) for the population over 36 months of age was added to the guideline, which was revised four times between 2013 and 2017.

At international level, the general guideline for claims (CXG-1-1979) was adopted by the Codex in 1979. The principles of nutrition and health claims were defined for guidance in 1997, supplemented by terms such as „low fat", „high fat", etc. (CXG-23-1997).

The Codex guideline makes the data in ***Table 1*** mandatory, but if a nutrition or health claim is made on food, the labeling should be supplemented with the nutrient claimed or the other substances with physiological effects, e.g. caffeine content. When there is a claim related to fatty acids, the amounts of the different fatty acids (saturated, monounsaturated, polyunsaturated) and, where required by member state regulation, the trans fatty acid content, in addition to the mandatory elements. The amounts of vitamins and minerals may be indicated if the product contains significant amounts of them.

It also allows for the voluntary indication of additional nutrients if, for example, required by national regulation, formulated by national recommendations or simply considered to be useful by the producer of the food. In all cases (mandatory, voluntary), the data must be expressed for 100 g weight or 100 ml volume, or portion, and it may be supplemented by the percentage of the Nutrition Reference Value (NRV). Regarding the presentation (font size, order of energy and nutrients, etc.), general principles have been formulated in the recommendations **[18].**

In addition to consumer education programs, the Codex guideline provides the opportunity to use other forms of voluntary expression through eye-catching graphic elements or symbols. These can help the consumer to get to know and understand the given nutrition declaration, and thus the nutrient content of the food, more easily.

Table 1. Content elements of the nutrition labeling of foods (✓=mandatory) in various laws

Content elements	**Unit**	**Regulation No 1169/2011/ EU**	**CODEX ALIMENTARIUS CXG 2-1985**	**Council Directive 90/496/EEC**		**Codex Alimentarius Hungaricus Requirement 1-1-90/496**		**MÉM-SZEM decree 10/1988. (VI. 30.)**
				Option 1	Option 2	Option 1	Option 2	
Energy	kJ/kcal	✓	✓	✓	✓	✓	✓	✓ kJ
Fat	g	✓	✓	✓	✓	✓	✓	-
Saturates	g	✓	✓	-	✓	-	✓	-
Carbohydrates	g	✓	✓	✓	✓	✓	✓	-
Sugar	g	✓	✓	-	✓	-	✓	-
Fiber	g	-	-	-	✓ Fiber	-	✓ Dietary fiber	-
Protein	g	✓	✓	✓	✓	✓	✓	-
Salt	g	✓	✓ Sodium or salt (optional)	-	✓ Sodium	-	✓ Sodium	-

4. Regulation of nutrition labeling in the European Union

4.1. Antecedents of legal harmonization

The basic objective of the regulation of food labeling, and thus of nutrition labeling, is to properly inform the consumer. In 1979, Council Directive 79/112/EEC on the labeling of foodstuffs in the European Union **[19, 1]**, did not yet cover the topic of nutrition labeling. Nutrition labeling was first regulated in 1990 by Council Directive 90/496/EEC as a voluntary labeling option, following the Codex Alimentarius guidelines on nutrition labeling. An exception was the regulation of foods for special dietary uses. At that time, however, it was agreed among food legislators that food business operators, especially small and medium-sized enterprises, should be encouraged to gradually introduce nutrition labeling **[20].**

Council Directive 90/496/EEC provided two options for nutrition labeling, the elements of which are shown in ***Table 1***. Quantities could be indicated per 100 g weight or 100 ml volume, or per portion, provided that the number of portions in the package was also indicated. There were specific rules for their display: they had to be indicated in a tabular form or in a linear, quantity-by-quantity manner, in a clearly visible way, depending on the space available (at that time, the applicable minimum font size had not yet been determined). Mandatory elements of the label showed the quantities of *energy, protein, carbohydrate, fat* or *energy, protein, carbohydrate, sugars, fat, saturates, dietary fiber and sodium.*

The nutrition labeling may have included one or more of the following: starch, polyols, mono-unsaturates, polyunsaturates, cholesterol. Vitamins and minerals present in significant amounts could also be indicated. The annex to the directive also contained the recommended daily allowances for some vitamins and minerals, as well as the definitions of significant amounts (when determining the significant amount, 15% of the recommended intake in this annex should normally be taken into account for each 100 grams, 100 milliliters or one package of the food, if the package contains only one portion). Graphic display was allowed, but special rules were not defined.

The calculation of nuritional value could be based on the results of the tests performed by the food manufacturer, or on calculations based on known or actual average values of the ingredients used, or on calculations based on generally established and accepted data.

Nutrition and health claims appeared more and more frequently on food labels throughout the European Union. Member state regulations were quite diverse, therefore harmonization was necessary, resulting in Regulation (EC) No 1924/2006 on nutrition and health claims made on foods, which specifies which claims (e.g., *low energy, energy reduced, source of protein,* etc.) may appear on the label and under what conditions. The foods on which a claim is made can have an effect on dietary habits and overall nutrient intake, therefore consumers should be aware of their nutrient content. This goal can be achieved by the mandatory nutrition labeling of such foods **[21]**. Nutrition labeling is also mandatory in case of addition of vitamins, minerals and certain other substances to foods (Regulation (EC) No 1925/2006).

According to a 2003 study by the DG SANCO (Directorate-General Health & Consumer Protection), 35 to 85% of pre-packaged products in EU member states bore nutrition labeling. The survey pointed out that consumers are interested in nutrition labeling, especially in the case of processed foods, but the majority only requires it, but do not actually use this information.

The results of a consultation in member states in 2003 drew attention to the fact that the voluntary nutrition labeling system was not working satisfactorily and that a legal change was inevitable. Mandatory nutrition labeling was required. The mode of display was particularly important, because the use of small font sizes and multilingual labels made labels confusing, and there was also a need to define exceptions (e.g. packaging materials with small surface areas, non-prepacked products, alcohols etc.). Legislators have recognized that the obligation to provide nutrition labeling may present a problem to businesses because of the additional costs, to which a long transition period and the development of guidelines could be a solution. It was found that alternative nutrition labeling could also be useful, however, if there are too many labeling methods on the market, a great variety can also confuse consumers and the functioning of the internal market. As a result of the survey, the options „Big 4" (energy, protein, carbohydrate, fat) and „Big 8" („Big 4" supplemented by saturated fatty acids, sugar, fiber and salt) were proposed by member states. It was noted that consumers do not understand the indication of the amount of sodium, so it is necessary to use the term salt (table salt). It was also judged that providing the energy content in kJ was not understandable for everyone, therefore the introduction of the use of Kcal was also on the agenda **[22, 23]**.

Regarding the use of other alternative forms of nutrition labeling (in addition to the nutrition labeling) there was a consensus that it should be clear and easy to understand. They also agreed that GDA (guideline daily amount) is a useful and easy to understand form of expression for all stakeholders of the food chain, but it can only be successful if it is harmonized at the EU level and developed by EFSA (European Food Safety Authority) or another independent scientific body **[23]**.

A 2005 consumer survey by BEUC (The European Consumers' Organisation), conducted in five countries (Germany, Denmark, Spain, Hungary and Poland), showed that nutrition labeling is of paramount importance to respondents; 74 to 84% of those interviewed stated that nutrition labeling was necessary. However, price, date of minimum durability/shelf-life and brand name are the most sought after information, nutrition labeling is read by only a few people, but the amount of fat and portion size are read by 50% of respondents. They spoke in support of other simplified forms of display. They also found that nutrition claims attract consumers' attention and influence their purchases. 80% of respondents stated that nutrition labeling was easy to find and 70% thought it was easy to understand, while for 50% this information was also reliable. Survey data have shown that the marketing value of claims is markedly high **[24]**.

The Commission's 2007 White Paper on nutrition, overweight and obesity related health issues noted that the number of overweight and obese people in the European Union, especially children, had risen significantly over the previous three decades. Although the individual is primarily responsible for their own and their children's lifestyles, it is an indisputable fact that the environment also effects behavior. Also, only a well-informed consumer is able to make rational decisions. Finally, an optimal outcome in this area can only be achieved if the different policy areas (horizontal approach) and the various levels of action (vertical approach) complement each other and are integrated.

It pointed out the need to think about making nutrition labeling mandatory and the regulation of the simplified labeling used on the front side of packaging.

The Commission's findings in the White Paper, growing consumer interest in the relationship between the diet and health, as well as the need to select a diet that meets the individual's needs have necessitated the implementation of a nutrition labeling systems that is uniform and mandatory throughout the European Union **[25, 26]**.

EU rules on food labeling, pertaining to all foods, were laid down by Directive 2000/13/EC, most of which reached back to the regulatory principles that emerged in 1978, while Council Directive 90/496/EEC had become obsolete, therefore it was time to amend it **[27, 7]**.

4.2. Legal harmonization

Based on the findings of the White Paper and the results of the surveys, Regulation (EU) No 1169/2011 (hereinafter referred to as: the Regulation) on the provision of food information to consumers, which ensures a high level of consumer protection, the free movement of goods and a level playing field, was established. The Regulation contains detailed rules on the labeling of prepacked foods, but also covers the labeling of non-prepacked foods to some extent. Since mandatory nutrition labeling imposes a significant burden on food business operators, the regulation allowed stakeholders a five-year preparation time, i.e., nutrition labeling on prepacked foods became mandatory from December 13, 2016 **[7]**. The goal of the legislation was to enable food information to reach the average consumer and to help them make a decision, despite their limited nutritional knowledge, while not creating barriers to trade **[22, 25]**.

Nutrition labeling according to the Regulation must be applied to all foods. Exceptions are food supplements and natural mineral waters. Unlike before, the new type of nutrition labeling prioritizes as mandatory elements energy content and nutrients whose excessive intake carries a health risk. Exceptions to this are carbohydrates and protein, which have become mandatory items due to the increasing frequency of diabetes and the resulting kidney disease. The elements in yellow in ***Table 2*** are mandatory, but it is possible to provide additional elements (marked in blue) on a voluntary basis. Nutrition labeling is also mandatory for the use of nutrition and health claims (on the packaging in the case of prepacked foods, while it does not have to displayed on non-prepacked foods, but the information should be available). Vitamins and minerals present in significant amounts may also be indicated, in accordance with the rules on specific values.

Certain foodstuffs are exempt from labeling in accordance to Annex V to Regulation (EU) No 1169/2011.

Table 2. Mandatory and voluntary elements of nutrition labeling of foods in Regulation (EU) No 1169/2011

Nutrition labeling in accordance with Regulation (EU) No 1169/2011	
Energy	kJ/kcal/100g or kJ/kcal/100ml
Fat	g/100g or g/100ml
of which	
- Saturates	g/100g or g/100ml
- Mono-unsaturates	g/100g or g/100ml
- Polyunsaturates	g/100g or g/100ml
Carbonhydrate	g/100g or g/100ml
of which	
- Sugars	g/100g or g/100ml
- Polyols	g/100g or g/100ml
- Starch	g/100g or g/100ml
Fibre	g/100g or g/100ml
Protein	g/100g or g/100ml
Salt (table salt)	g/100g or g/100ml
Vitamins and minerals, Units given according to Annex XIII. A. 1. point	

The information may be given per 100 g weight or 100 ml volume but may also be expressed per portion or unit of consumption (for specific portion/packaging unit or characteristic unit of consumption due to the nature of the food). The amounts of vitamins and minerals referred to in Part A of Annex XIII to the Regulation should also be expressed as a percentage of the nutrient reference value (NRV) per 100 grams or 100 milliliters of the product. The energy content and the amounts of nutrients may also be expressed as a percentage of the nutrient reference value, expressed per 100 g weight or 100 ml volume, or per portion or unit of consumption. For nutrient reference values expressed per 100 grams 100 milliliters, the following information should also be provided: *„Reference intake of an average adult (8400 kJ / 2000 kcal)*.

In terms of presentation, the Regulation is quite precise and clear; the elements of the nutrition labeling shall be presented in a specific order, preferably in a tabular form (if this is not possible, then continuously, without interruption) following each other, in the same field of vision, in a specific font size. The nutrition labeling is a closed list to which, in the case of foods for normal public consumption, additional elements cannot be added within the list, only to the end of the list (e.g. the amount of lactose should not be included with the sugars, it can only be displayed following the table).

The calculation of nutritional value could be based on the results of the tests performed by the food manufacturer, or on calculations based on known or actual average values of the ingredients, or on calculations based on generally established and accepted data.

Tolerance limits for nutrition labeling are important because, due to the natural variations in the composition of the raw materials and the effects of production and storage, it is not possible to determine the nutrient content of foods accurately within the analytical error.

However, the values given on the label must not deviate from the actual values to such a significant extent as to mislead or harm consumers. In relation to this, a guide has been developed under the coordination of the European Commission to help establish tolerance limits for nutrition values displayed on food labels.

According to the Regulation, specific elements of the nutrition labeling can be repeated in the main field of vision in two ways:

a) energy, or

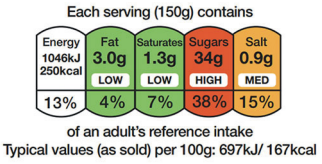
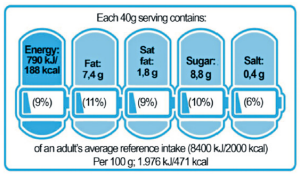
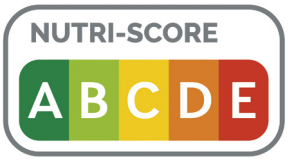
b) energy, fat, saturates, sugars, salt.

In addition to the mandatory display, the Regulation also allows the use of graphic forms and symbols.

There are many voluntary graphic expressions and representations of nutrition labeling in the European Union. These display formats differ from each other. These display categories are not comparable, as they are based on completely different principles and have different uses.

Currently, we can basically distinguish four categories ***(Table 3)***.

Table 3. Examples of voluntary nutrition labeling of foods

Repeatable data required by the Regulation (energy, fat and saturated fatty acids, sugars, salt) with other display elements and symbols	
• Color-coded label, which also indicates which nutrients are present in large (red), medium (yellow) and small (green) amounts (e.g.: Traffic light)	
• Graphically marked label, which also graphically displays the value expressed as the percentage of the nutrient reference value (e.g.: Battery).	
Behind the use of this symbol, there is a product group-specific system of energy and nutrient criteria, which facilitates a choice within the given product group that can be incorporated into "healthy" diet	
• Nordic Keyhole **[28]**	
Based on the energy and nutrient content of the food and the presence of certain other beneficial substances, it classifies the given food from a nutritional point of view according to certain rules	
• Nutri-Score – classifies the product into one of five categories, using five colors from dark green to dark orange	

5. Legal environment in Hungary

From the middle of the 19th century, the authorities of developed European countries began to adopt food laws. The first legal regulation of food in Hungary was Act XLVI of 1895 (on the prohibition of counterfeiting agricultural produce, products and articles) **[29]**.

In the first decades of the 20th century, severe food crises occurred on the continents, from malnutrition to overnutrition. Over time, overeating in Europe started to pose an increasing health risk, leading to obesity and other health disorders. As a result, health organizations in developed and developing countries have become increasingly concerned with the regulated satisfaction of human nutritional needs. They were looking for the amount of energy, protein, fat, vitamins etc. which was absolutely necessary to maintain health, but at the same time they also studied the excessive intake of these nutrients and its consequences.

Starting from 1949, the Institute of Food Science (former name of the National Institute of food and Nutrition Science (OÉTI) regularly examined the diet of the Hungarian population and continuously modified the domestic nutrient requirements and created nutrient tables **[30]**.

Statutory order no. 27 of 1958 was the first legal act that regulated the production and distribution of foods and beverages and ordered the establishment of the Hungarian Food Codex **[31]**. Nutrition labeling did not appear as such in this order, but the importance of the diet and nutritional health was already emphasized for the „*health of our people*". As a result of joining the work of the Codex Committee (1963), the ideas and current issues appeared in food regulation in Hungary as well **[32]**.

As regards nutrition labeling, MÉM decree 25/1976 (VII. 11.) on the implementation of Act IV of 1976 on foodstuffs **[33]** provided that „*…where possible, essential nutrients should also be indicated on the packaging of the food to promote modern nutrition"* **[34]**. The concept of "essential nutrient" was not defined in the decree, however, the nutrient table based on the work of OÉTI and edited by Dr. Róbert Tarján and Dr. Károly Lindner names them: energy content, carbohydrate, protein, fat **[30]**. At that time, laws did not define every detail and, as a result, individual professional decisions, evaluations and authorizations in connection with the given product played important roles.

Hungary recognized the importance of communicating nutrition labeling to consumers and, accordingly, MÉM decree 25/1976 (VII. 11.) provided the opportunity for voluntary nutrition labeling. During this period, a Codex document on the subject did not yet exist.

Strict rules applied to the fortification of foods with vitamins (e.g. only vitamins that also occurred in the food naturally were allowed to be added as fortification to the food). The name of the vitamin and its amount in the food had to be indicated and, in case of „diet" foods, the amounts of the important nutrients, in addition to the otherwise mandatory general labeling data had to be added.

For certain products/product groups, salt, fat, protein, starch, carbohydrate and energy content were also mentioned in the standards as quality criteria, but their indication was not mandatory in all cases. For example, in case of breads containing whole wheat flour, the carbohydrate content (per 100 g of product) had to be indicated in addition to the energy content (expressed in kJ) (MSZ-08-1377-86).

MÉM (former Ministry of Agriculture and Food) decree 25/1976 (VII. 11.) was replaced in 1988 by MÉM-SZEM (former Ministry of Agriculture and Food – former Ministry of Social Affairs and Health) decree 10/1988 (VI. 30.), which required the mandatory indication of the energy content per 100 grams (cm^3) of the product, expressed in kJ, in case of prepacked foods. Among other things, the decree included the main types of *„diet foods"*, e.g. the categories of *energy reduced foods; low energy; energy free; reduced sodium content* and *low purine*, and their criteria. Nutrition labeling was mandatory on these foods, i.e., the energy content and the amounts of the nutrients that provided the energy, as well as the nutrients characteristic to the food and , possibly vitamins had to be indicated. Foods were allowed to be fortified or supplemented with certain vitamins (retinol, calciferol tocopherol, thiamine, pyridoxine, pantothenic acid, folic acid, cobalamin, ascorbic acid) **[35]**.

This regulation provided that the product information sheet and the certificate of analysis must include the nutritional composition of the food „(protein, fat, carbohydrate, etc.) and other characteristics, energy content (per 100 grams or 100 cm^3)". On the packaging of the food had to be indicated: „the name of the food as specified in the standard, manufacturing authorization, product data sheet or other specification (e.g., marketing authorization in case of imported foods), and other mandatory information specified in the relevant standard (e.g., dry matter content, fat content, etc.)".

Hungary's application for membership of the European Union, submitted in April 1, 1994, made it necessary to prepare for legal harmonization. Council Directive 90/496/EEC on nutrition labeling was incorporated into Regulation 1-1-90/496 of the Hungarian Food Codex. Joint FM-NM-IKM decree 1/1996 (I. 9.) on foodstuffs stated that the energy content of foods must be given according to the Hungarian Food Codex. In addition to the data required for a given type of food, foods for special dietary uses and foods with claims (today these are called nutrition and health claims) had to bear the nutrition labeling required by the Hungarian Food Codex **[36, 37, 38]**.

Before 1996, about five thousand kinds of food could be bought, but this number increased sevenfold by the turn of the millennium, because in the meantime new requirements, consumer needs and expectations appeared. Food production had shifted towards the manufacture of higher quality foods, and for this reason, as well as in preparation for accession, the creation of a new legal framework became necessary **[29]**.

The elaboration of Act No. LXXXII of 2003 (the fifth Hungarian food act) was necessitated by Hungary's membership in the European Union. The basic ideas of the law included the protection of the interests and health of consumers, the protection of the environment, and the promotion of fair competition and the free movement of goods **[39]**. In Hungary, during the preparation period between 1995 and 2004, the regulations of the European Union were gradually adopted into the food act and ministerial decrees, however, with the accession to the EU on May 1, 2004, these transitional legal acts became obsolete **[36, 29]**.

In 2004, Directive 2000/13/EC on the labeling of foodstuffs was transposed in accordance with the specifications of joint FVM-ESzCsM-GKM (former Ministry of Agriculture and Rural Development – Ministry of Health Social and Family Affairs – former Ministry of Economy and Trade Affairs) decree 19/2004 (II. 26.), so the legal harmonization of food labeling had been completed. Nutrition labeling remained a voluntary labeling element (with the exception of foods with claims, fortified foods and foods for special dietary uses) until the entry into force and mandatory application of Regulation (EU) No 1169/2011.

6. Conclusions and the future of nutrition labeling

Nutrition labeling of foods has come a long way in the European Union, creating the opportunity for consumers to enjoy uniform and detailed information in all member states of the Community. EU and national legislators still face a number of challenges. From health and environmental points of view, our current food consumption habits are receiving increasing criticism. Average energy intake, the consumption of sugars, salt and fats remains above recommended levels, while the consumption of whole grains, fruits and vegetables, legumes and nuts is low **[40].** The increase in the incidence of overweight and obesity is critical, so this trend needs to be reversed according to the guidance of FAO and WHO, which requires a shift towards a plant-based diet. The consumption of more fruits and vegetables could also reduce the risk of diet-related diseases and, according to some calculation, the environmental impact of the human diet **[41].** The regulation of food labeling must therefore continue to follow scientific developments and provide consumers with the information that can form the basis for a balanced and sustainable consumption of food that meets individual needs in the most comprehensible way possible.

7. References

[1] 1-1-90/496 számú előírás Az élelmiszerek tápérték jelölése. https://elelmiszerlanc.kormany.hu/download/5/15/b1000/1190496_2008.pdf (Acquired: 10.04.2020.)

[2] 1/1996. (I. 9.) FM-NM-IKM együttes rendelet az élelmiszerekről szóló 1995. évi XC. törvény végrehajtásáról. http://www.jogiportal.hu/index.php?id=ox3vqr5r05x37xiuy&state=20040501&menu=view (Acquired: 15.04.2020.)

[3] Hawkes, C. (2004): Nutrition Labels and Health Claims: The Global Regulatory Environment. World Health Organization. https://apps.who.int/iris/bitstream/handle/10665/42964/9241591714.pdf;jsessionid=C1A-6B4E2298D31D0EE62AAB9F26AD893?sequence=1 (Acquired: 15.04.2020.)

[4] Shine A., O'Reilly S., O'Sullivan K. (1997): Consumer use of nutrition labels. British Food Journal 99 (8), pp. 290-296. https://doi.org/10.1108/00070709710188390

[5] Swinburn B.A., Caterson I., Seidell J.C., James W.P.T. (2004): Diet, nutrition and the prevention of excess weight gain and obesity. Public Helath Nutrition 7 (1a), pp. 123-146 https://doi.org/10.1079/PHN2003585

[6] WHO (2002): Food and health in Europe: a new basis for action. http://www.euro.who.int/__data/assets/pdf_file/0010/98308/e78578.pdf?ua=1 (Acquired: 15.04.2020.)

[7] Regulation (EU) No 1169/2011 of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers. https://eur-lex.europa.eu/legal-content/HU/TXT/?qid=1590059460140&uri=CELEX:32011R1169 (Acquired: 20.03.2020.)

[8] Gill C., Lynn S. (2005): Consumer understanding and use of nutrition labelling: a systematic review. Public Health Nutrition 8 (1) pp. 21-28 https://doi.org/10.1079/PHN2004666

[9] WHO (2018): Global nutrition policy review 2016-2017: country progress in creating enabling policy environments for promoting healthy diets and nutrition. https://www.who.int/publications-detail/9789241514873 (Acquired: 20.04.2020.)

[10] Szakos D., Ózsvári L., Kasza Gy. (2020). Perception of Older Adults about Health-Related Functionality of Foods Compared with Other Age Groups. Sustatinability, 12 (7), pp. 2748. https://doi.org/10.3390/su12072748

[11] Plasek B., Lakner Z., Kasza Gy., Temesi Á. (2019): Consumer evaluation of the role of functional food products in disease prevention and the characteristics of target groups. Nutrients, 12 (1), pp. 69. https://doi.org/10.3390/nu12010069

[12] Szente V., Szabó S., Varga Á., Szakály Z. (2013): Az egészségre vonatkozó jelölések fogyasztói megítélése. Élelmiszer, Táplálkozás és Marketing 9 (1), pp. 85-90.

[13] Németh A., Szabó E., Kasza Gy., Ózsvári L. (2020): Development of lactose free, functional dairy foods based on consumer survey. GRADUS 7 (1) 26-29 http://gradus.kefo.hu/archive/2020-1/

[14] Kiss A., Pfeiffer L., Popp J., Oláh J., Lakner Z. (2020): A Blind Man Leads a Blind Man? Personalised Nutrition-Related Attitudes, Knowledge and Behaviours of Fitness Trainers in Hungary. Nutrients, 12 (3), 663. https://doi.org/10.3390/nu12030663

[15] Codex Alimentarius. http://www.fao.org/fao-who-codexalimentarius/about-codex/en/ (Acquired: 03.03.2020.)

[16] Codex Alimentarius: Understandig Codex. http://www.fao.org/3/a-i5667e.pdf (Acquired: 03.03.2020.)

[17] Codex Alimentarius, Nutrition and Labelling. http://www.fao.org/fao-who-codexalimentarius/thematic-areas/nutrition-labelling/en/ (Acquired: 03.03.2020.)

[18] World Health Organization Food and Agriculture Organization of the United Nations (2007): Food Labelling http://www.fao.org/3/a1390e/a1390e00.htm (Acquired: 10.05.2020.)

[19] COUNCIL DIRECTIVE of 18 December 1978 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs for sale to the ultimate consumer (79/112/EEC) https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:31979L0112&qid=1582572789147&from=EN (Acquired: 10.03.2020.)

[20] Council Directive 90/496/EEC of 24 September 1990 on nutrition labelling for foodstuffs. https://eur-lex.europa.eu/legal-content/HU/TXT/?qid=1590059702558&uri=CELEX:31990L0496 (Acquired: 20.03.2020.)

[21] Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on nutrition and health claims made on foods. https://eurlex.europa.eu/legalcontent/HU/TXT/?qid=1590059558995&uri=CELEX:32006R1924 (Acquired: 20.03.2020.)

[22] Health & Concumer Protection, Directorate General (2006): Labelling, competitiveness, consumer information and better regulation for the EU. https://ec.europa.eu/food/sites/food/files/safety/docs/labelling-nutrition_better-reg_competitiveness-consumer-info_en.pdf (Acquired: 10.04.2020.)

[23] Summary of result for the consultation document on: "Labelling: competeteviness, consumer information and better regulation for the EU" Directorate E-Safety of the Food Chain, Unit E4-Food law, nutrition and labelling. pp. 5-20.

[24] The European Consumers' Organisation (2005): Report on European Consumers' Perception of Foodstuffs Labelling. Results of Consumer Research conducted on behalf of BEUC from February to April 2005. https://www.vzbv.de/sites/default/files/mediapics/beuc_foodstuffs_labelling_09_2005.pdf (Acquired: 20.04.2020.)

[25] Fehér Könyv: A táplálkozással, túlsúllyal és elhízással kapcsolatos egészségügyi kérdésekre v onatkozó európai stratégiáról (White Paper on a Strategy for Europe on Nutrition, Overweight and Obesity related health issues). https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0279:FIN:HU:PDF (Acquired: 10.04.2020.)

[26] Comission of the Eurpean Communities (2007): White Paper on a Strategy for Europe on Nutrition, Overweight and Obesity related health issues. https://ec.europa.eu/health/archive/ph_determinants/life_style/nutrition/documents/nutrition_wp_en.pdf (Acquired: 20.04.2020.)

[27] Directive 2000/13/EC of the European Parliament and of the Council of 20 March 2000 on the approximation of the laws of the Member States relating to the labelling, presentation and advertising of foodstuffs. https://eur-lex.europa.eu/legal-content/HU/TXT/?qid=1590061390148&uri=CELEX:32000L0013 (Acquired: 10.04.2020.)

[28] Swedish Food Agency: The Keyhole.
https://www.livsmedelsverket.se/en/food-and-content/labelling/nyckelhalet
(Acquired: 20.05.2020.)

[29] Molnár P., Várkonyi G. (1996): Az új magyar Élelmiszertörvény. Élelmiszervizsgálati Közlemények 62 (2), pp. 95-99.

[30] Tarján R., Lindner K. (1974): Tápanyagtáblázat. Medicina kiadó, Budapest.

[31] 1958. évi 27. törvényerejű rendelet
https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=1950
(Acquired: 08.04.2020.)

[32] Codex Alimentarius https://elelmiszerlanc.kormany.hu/codex (Acquired: 03.03.2020.

[33] 1976. évi IV. törvény az élelmiszerekről.
https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=1970
(Acquired: 08.04.2020.)

[34] 25/1976. (VII. 11.) MÉM rendelet az élelmiszerekről szóló 1976. évi IV. törvény végrehajtásáról
https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=1970
(Acquired: 08.04.2020.)

[35] 10/1988. (VI. 30.) MÉM-SZEM együttes rendelet az élelmiszerekről szóló 1976. évi IV. törvény végrehajtásáról. https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=1980
(Acquired: 08.04.2020.)

[36] Az élelmiszerekről szóló 2003. évi LXXXII. törvény, a módosításokkal egységes szerkezetben és kommentárja.
http://www.asvanyvizek.hu/js/tinymce/plugins/filemanager/files/jogiszab/elszi_1_2008.pdf
(Acquired: 10.04.2020.)

[37] 1/1996. (I. 9.) FM-NM-IKM együttes rendelet az élelmiszerekről szóló 1995. évi XC. törvény végrehajtásáról.
https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=1990
(Acquired: 08.04.2020.)

[38] 1995. évi XC. törvény az élelmiszerekről.
https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=1990
(Acquired/(Acquired: 10.04.2020.)

[39] 2003. évi LXXXII. törvény az élelmiszerekről.
https://adtplus.arcanum.hu/hu/collection/MagyarKozlony/?decade=2000
(Acquired: 10.04.2020.)

[40] Willett W. et al (2019), 'Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems', in Lancet, 393, pp. 447-92.
https://doi.org/10.1016/S0140-6736(18)31788-4

[41] FAO and WHO (2019): Sustainable healthy diets - guiding principles.
http://www.fao.org/3/ca6640en/ca6640en.pdf
(Acquired: 20.04.2020.)