The Front Labelling of Food: Nutritional Traffic Lights, Nutri-Score and Others

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The labelling of packaged foods is a universal concern present in the national legislation of most countries. Regulation (EU) No. $1169/2011^2$ on food information provided to the consumer allows the possibility of using a front nutrition label FOPL (Front-of-Pack nutrition label) in a complementary way to the mandatory nutrition information, on a voluntary basis, without replacing it, as long as the requirements mentioned in said Regulation are met, do not mislead the consumer, are not ambiguous or confusing and are based on relevant scientific data. The application of a "front" nutritional label is interesting in principle because it is more visible, unlike the mandatory nutritional label, which is located on the back or side of the packages. However, on the other hand, it can mislead the consumer should they intend to value the product nutritionally apart from the diet as a whole. An effective policy for the health of the citizen must be based on adequate training in food and consumption, starting from school age and reaching to society in general, contemplating the insertion of the variety of products in the variety of possible diets, according to the nutritional needs of the citizen, based on age, sex, lifestyle and sustainability. In this context, front labelling must be integrated into a global strategy to be effective and avoid being counterproductive. This document aims to offer food for thought to people, institutions and companies that have to make decisions regarding food labelling.

I. Background

Having food for the entire population and correct information on nutrients and diet is included in the global scope of the United Nations Sustainable Development Goals (SDGs) (3-Good Health and Well-being).

The 'Triptolemos Foundation' is a private organization whose objectives include the development of the concept of a sustainable Global Food System, both

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in its theoretical and operational aspects. It contributes with its actions to its optimization, to achieve an adequate diet for the entire population as well as the citizens' trust, based on knowledge, science and technology. Twenty-six universities and the CSIC (Higher Council for Scientific Research), companies, consumer associations and social support, among other representatives of the food system, participate in it.

The Board of the Foundation, meeting on February 18, 2020 and at the proposal of some of its members (consumers and universities), approved the drafting of a report on the frontal labelling of food, given the interest generated by nutritional information both from consumption and from production. To do this, researchers from universities and the Higher Council for Scientific Research and members of the board were invited to participate.

Along these lines, the Foundation has already promoted the "Declaration of the Triptolemos Foundation on false news and recommendations in the food sector"³, organized the first round table in Spain on "Fake news: consequences for companies and consumers", and recently has written the "Report on food classification: the concept of ultra-processed food"⁴.

Among the activities it carries out, the Foundation writes reports on topics of interest, with the scientific support and independence that characterizes them and with a global focus on the food system.

II. Food System

The world population grows with a tendency to concentrate in urban areas. The right to healthy, adequate and sustainable food for the entire population represents an important challenge in the current context.

Science is the motor of human development in all its aspects. The growth of humanity should be harmonious and sustainable within an ethical framework. This will not be achieved if simultaneously the same evolution does not occur in the Global Food System⁵, in which the role of science and responsible business activity is fundamental.

Human Society is a complex organization. Within it, the food system is the expression of an essential biological need. It is a system with multiple variables, transversal, complex and articulated. From the Triptolemos Foundation, the Food System focuses on four main axes: availability, economy, politics and knowledge (behaviour, knowledge and culture), which grow in fractal structure and are interrelated. All of them have to balance to achieve optimal functioning of the Global Sustainable Food System. Training in correct eating habits and providing information to citizens to help them design their adequate diet are basic pillars.

III. Nutritional Labelling in Food Legislation

The labelling of packaged foods is a universal concern present in the national laws of many countries. The work and publications of the *Codex Alimentarius* (FAO / WHO)⁶ in its joint programme on food standards and food labelling can be taken as a global reference.

Currently, more than forty countries around the world have a nutritional labelling system on the front of packages in force. While most countries have introduced voluntary nutrition labels on the front of packages, some countries have made them as mandatory. In general, the trend is for countries in the same geographic region to use similar nutritional labels, adapting certain aspects to the country's consumption habits.

- 3 See http://www.triptolemos.org/en/triptolemos-foundation-statement/
- 4 European Food and Feed Law Review, Vol. 15, No. 4, 2020, 357-362.
- 5 See: Clotet, R., Colomer, Y., Jarauta-Bragulat, E. and Mayor, F., "El sistema alimentario global: I - Definición de un espacio", Revista Española de Estudios Agrosociales y Pesqueros, No. 235, 2013, 13-32.
- 6 See http://www.fao.org/fao-who-codexalimentarius/en/

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Regulation of the European Parliament and of the Council of 25 October 2011 on the provision of food information to consumers, amending Regulations (EC) No 1924/2006 and (EC) No 1925/2006 of the European Parliament and of the Council, and repealing Commission Directive 87/250/EEC, Council Directive 90/496/EEC, Commission Directive 1999/10/EC, Directive 2000/13/EC of the European Parliament and of the Council, Commission Directives 2002/67/EC and 2008/5/EC and Commission Regulation (EC) No 608/2004 (OJ L 304, 22.11.2011, p. 18) [ELI: http://data.europa.eu/eli/reg/2011/1169/oj].

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In the European Union, EU Regulation No. 1169/2011 establishes the possibility, of using a FOPL (Front-of-Pack nutrition label) on a voluntary basis. On this subject, the WHO ("Guiding principles and framework manual for front-of-pack labelling for promoting healthy diet", 20187) has issued a definition of intentions and methodologies to complement the mandatory nutritional information, without substituting it, as long as the requirements mentioned in said Regulation are met: do not mislead the consumer, are not ambiguous or confused, and are based on relevant scientific data. If we take the European Union as an example, the form and content of the labelling is defined in the aforementioned Regulation. Regarding the nutritional aspect, the amount of energy, total and saturated fats, carbohydrates and sugars, fibre, proteins and salt are indicated. All for 100 g and per serving, and the percentage of contribution of nutrients with respect to the reference intake of an average adult.

The abovementioned Regulation No. 1169/2011 in its article 35, allows the inclusion of different forms of voluntary information, such as front labels, in addition to the mandatory nutritional information. The conditions to be met are set and in article 35 it is interesting to contemplate the sections: a) based on rigorous studies, b) broad consensus, and c) aimed at facilitating understanding of the importance of food in relation to energy intake and of nutrients from a diet.

IV. Front of Pack Labelling: Nutritional Traffic Lights, Nutri-Score and Others

Consumers generally do not have sufficient knowledge to interpret and choose the food products they purchase to shape their diet correctly, regardless of how the information is presented on the label. The overriding goal, therefore, must be for consumers to learn to interpret information presented on labels in an understandable, clear, useful and effective way.

Front of pack nutritional labelling is interesting in principle because it improves visibility, unlike the mandatory nutrition labelling, which is located on the back or side of the packages. Front labelling allows the nutritional information of the product to be viewed quickly at the time of purchase and is presented graphically, making it easier to read and interpret. This type of labelling has been introduced in

many countries promoted by some scientists and some companies, with the support of the corresponding government services.

The objectives of this nutritional labelling on packaging are usually two:

- 1) to provide additional information to consumers to make healthier food decisions and
- 2) to encourage food business operators to reformulate their products to make them healthier options.

Therefore, labelling on the front of packages is increasingly seen as a tool to support prevention strategies against obesity and other food-related non-communicable diseases.

The European Commission has recently produced complementary reports⁸ on the use of additional forms of expression and presentation of nutritional information, which respond to the obligation imposed on the Commission in Article 35 of the aforementioned Regulation on food information provided to the consumer. These reports describe the main nutritional labelling systems on the front of the packages that are currently being used or developed in the EU, as well as some of the systems used internationally with their advantages and disadvantages.

There are many proposals on presentations and forms of voluntary front labelling. This causes a major difficulty in achieving a broad consensus, which is necessary to have credibility and understanding for all citizens.

The first front labelling system was introduced in Sweden in 1989. Later Denmark (2009) and Lithuania joined, and different ones also appeared such as in Slovenia (1992), Finland (2000), United Kingdom (2013), Croatia (2015) or in France with the Nutri-Score (2017). With reference to the Nutri-Score, Belgium, Germany, Spain, the Netherlands, Luxembourg, Switzerland and Italy are among those which have granted legal acceptance, although some propose adaptations that favour their food system.

⁷ See https://www.who.int/nutrition/publications/policies/guiding-principles-labelling-promoting-healthydiet.pdf?ua=1.

⁸ Report from the Commission to the European Parliament and the Council regarding the use of additional forms of expression and presentation of the nutrition declaration, COM(2020) 207 final: https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52020DC0207&from=ES [see also: Ciriolo, E. et al., "Front-of-pack nutrition labelling schemes: a comprehensive review", Publications Office of the European Union (2020) 202 pp.]

In addition to all these versions, generally supported by their respective administrations, there are private institutions, distribution chains (such as the SENS project in France and Eroski in Spain), associations and companies for the promotion of health, among others, that offer or have offered their particular front labelling system. Apart from the EU, there are more countries with their own labelling proposals such as Chile, Ecuador, Colombia and Mexico in Latin America, Malaysia, Singapore and Thailand in Asia, Australia and New Zealand, among others.

The information offered by all of them is qualitative, according to the concept of traffic lights (synthetics) or numerical or alphabetical gradation (descriptive). The concepts or parameters they value are also different, as well as the methodology they use.

The present report has taken the Nutri-Score in its latest version⁹ as an example of analysis, as it offers the most detail today, in its definition and methodology.

Nutri-Score labelling emerged in France in 2017 with the idea of implementing an easy description in the nutritional labelling of food, which helps consumers in the European Union to make the proper nutritional choice in their purchase.

Nutri-Score is based on a 5 letter, 5 colour classification system, in which the dark green A is the best nutritional option and the red E is the worst, passing through B, C and D. The system gives each food a letter associated with a colour that is calculated using an algorithm. This classification is supported by the result of an algorithm, which associates a series of points according to the proportion in the composition of the food, based on the energy content, sugars, saturated fats and sodium, which it values in a negative way, and the content of proteins, fruits, legumes, nuts, fibre and rapeseed, walnut and olive oils, which it values positively. Nutri-Score can be applied to packaged products, except for a wide variety of foods such as:

- Fresh products: meat, fish, fruit, vegetables, and legumes, among others.
- Products that only have one ingredient in their composition: vinegar, honey, etc. provided they are not processed.
- Coffee, tea, and herbal teas.

- Food directly supplied by the manufacturer or retail stores in small quantities (such as ready meals).
- Food that are sold in containers whose largest surface area is less than 25 cm2: chocolates, sweets, cereal bars, etc.
- · Alcoholic beverages.

The Nutri-Score is composed according to the nutritional composition of 100 g or 100 ml of a food product. The Nutri-Score on front labelling aims to: 1) give intuitive information without creating confusion, error or misconception in consumers concerning the nutritional value of food and beverages; 2) provide a comparison between foods of the same category, of different or similar brands; 3) help the consumer to identify healthier products and 4) motivate the food sector to improve the nutritional quality of its products and the food that they make available to consumers by reformulating existing products or food innovations.

V. Considerations on Front Labelling and Diet

- In the shopping basket there are multiple products, from which the citizen must design his diet. To do this, you need to know the nutritional characteristics of all the products you have and not just the packaged foods that have front labelling.
- Nutritional needs are different for each individual based on variables such as age, sex, physical condition, among others, so that food that may be adequate for one sector of the population may not be so for another. For all this, it is essential to encourage knowledge with which you can meet your needs and organize your proper diet.
- Nutritional traffic lights can mislead the consumer. In a consumer's intention to value the product nutritionally apart from the diet as a whole, the consumer can interpret it as a sign of nutritional value and, consequently, classify a product with a red light as negative or, if applicable, lacking in evaluation. This referred quality that, on the other hand, has already been ensured by the administration in the respective controls (both during its elaboration and already on the market), guarantees that the product complies with all aspects of current legislation-legislation that in turn has been elaborated from scientific data (EFSA, FDA and CODEX FAO / WHO).



Mexico: New Logos for Nutritional Labelling

- A front labelling system is not easy to generalize for different countries, due to the differences between the eating habits of the population. Cultural biases are involved that may influence food choice differently, regardless of labelling. On the other hand, aspects related to basic consumer training, especially in matters of food and nutrition, are also different depending on the country and may affect the interpretation of the message that the label wants to give, if there is no prior training in education.
- Labelling an individual food as good, less good or bad from the point of view of health, applying a certain algorithm based on its composition, is an approximation that does not conform to what is accepted today by the different nutritional © Triptolemos Foundation 2020 www.triptolemos.org triptolemos@triptolemos.org which issued 9 guidelines published in different countries, and refers to healthy diets or eating patterns and not to individual foods.
- The algorithms for estimating the scores of the various systems differ fundamentally in the calculation base used, which means that the same product can obtain different scores depending on the system used. This is one of the aspects that should be analysed.
- Abundant works on nutritional front labelling have been published, but for the moment they refer either to the acceptance of front labelling by the consumer or to the suitability of the algorithm used. None of them refers to the need for training. Nor are there any studies on the real influence that the use of frontal labelling can have on the health of a certain population, over a considerable length of time, compared to another without it.
- An adequate diet is the result of the balance between the nutritional needs of each individual based on age, sex, lifestyle, their situation and the supply

- of nutrients provided in different proportions and from different sources. Nutritional information must be subject to prior training to achieve this balance. Nutritional training and information should be agreed between all the people involved (scientists, producers, sociologists, legislators, etc.). There should be coherence in food and citizen policies in the great economic-social regions of the globe (EU, USA, Latin America, Asia, and Africa).
- The various front labels that are proposed are not accompanied by training, so they can confuse the citizen and can be counterproductive. The nutritional information they provide should be understood as complementary to the product, so that it can be related to a diet. The training should provide the necessary knowledge to create a favourable attitude towards healthy habits based on proven scientific knowledge, so that consumers of different ages and circumstances could make an adequate choice of foods, which would shape their diet.
- The EU Commission Report regarding the use of additional forms of expression and presentation [COM(2020) 207 final] notes the lack of consensus in the European internal market between countries (among others the controversial Art. 35), farmers and stockbreeders, SMEs and large companies. The report incorporates reflections such as: «... they must be accepted and understood so that they can influence ... there are a small number of studies on buying patterns in real life there is not enough empirical evidence that allow conclusions to be drawn ...».

VI. Concerns and other remarks on the Nutri-Score Labelling

Some more considerations about Nutri-Score labelling due to its greater presence in the environment of the countries of the European Union may be:

• It is only applied to packaged products: given that the diet is composed of varied foods, with or without packaging, this bias in nutritional information can confuse the consumer, inclining them towards a priority consumption of packaged foods. The fact that certain foods are excluded from their evaluation does not make the Nutri-Score a reliable nutritional tool either. As an example, a question could be asked about the necessity to give consumers information about honey, which contains more than 65% of sugar.

• If the front labelling system is voluntary, it is likely to be used only by those brands whose products score well. So, there would be a distorted view of food products as a whole. In this case, what could be interpreted as a nutritional claim may not be so.

• The Nutri-Score system aims to be a simple coding tool to help consumers improve their choice when buying food. Although initially it seems to be a useful system, which makes it easier to interpret the label quickly, it is only indicated for comparing products within the same category, for example, in the comparison of different types of yogurts. However, it does not allow the comparison between non-similar products (it is impossible to compare a light carbonated drink with, for example, cheese, using the Nutri-Score system). This is one of its main weak points.

• The reference base should be defined in terms of Recommended Ration and Frequency, and always under nutritional criteria. Neither the use of 100 g as a calculation reference used by Nutri-Score, nor the average portion used in the current labelling, nor the segregation by ingredients used in other cases, are correct to assign a colour to a certain product. Additionally, this information, obtained by consensus, should be included in terms easily recognizable by the consumer (glass, cup, tablespoon, ... large, medium, small, ... number of units, etc.; frequency of daily, weekly, occasional consumption, etc.).

 In nutrition, the size of the rations is important and must be personalized to each individual. In the Nutri-Score the ratings are based on a 100 g or 100 ml portion of food. Not all food rations are the same size. This fact means that certain products can be classified as D or E, but then due to the usual portion size they are not so negative for health. It is important that consumers recognize what the recommended portion of a food product is, to teach themselves how to eat properly. Basing the rating on 100 g favours products that are routinely consumed in larger servings greater than 100 g and harms those that are typically consumed in lower amounts.

 Initially, the Nutri-Score rating is based on the nutritional composition of 100 g or 100 ml of a food product and does not consider the nutritional value or nutrient density. To counteract this, modifications are being proposed for certain foods in different countries, which will not allow having a unified model for all of them and consumers of the European Union, the objective of the Internal Market. For example, this has happened in France, where they have modified the Nutri-Score to give a better rating to cheese. Cheese is a food that due to its nutritional composition would be catalogued with a red traffic light, due to its high fat content, specifically saturated fatty acids and a high salt content. However, if we pay attention to the nutritional value of cheese, it is a good source of calcium and protein in the diet, so moderate consumption would not be harmful. Something similar could happen for cured hams in Spain, since it would be given an orange light and a D rating. The Spanish Agency for Food Safety and Nutrition (AESAN) recently reported the continuous changes that until now the algorithm applicable to all countries that adopted it, has undergone to adapt to their nutritional habits, with reference to cheese, beverages, saturated fats and olive, walnut and rapeseed oil and which, according to said report, must comply with a stricter description 10.

 Nutri-Score labelling covers a limited number of products and its classification algorithms visualize a very specific application environment, aimed at a population with abundant food availability and with problems of incorrect nutrition due to caloric excess.
Thus, for example, considering dietary energy as a negative value may be a contradiction in populations with problems of malnutrition due to famine.

 Data on salt content, saturated fatty acids, sugar, etc. that are already included in the mandatory EU labelling and that many citizens already consider specifically (population with some type of pathophysiology) may be masked by the Nutri-Score, not only because they are compensated by other calculation parameters of the algorithm itself for a certain

¹⁰ Revista del Comité Científico de la AESAN, No. 31, 2020, 77-97.

product, but also because of the visual preference effect of the front of pack labelling.

VII. Conclusions¹¹

It is basic in nutrition that a proper diet is the result of a balance between the specific needs of each person and the intake and proportion of the different nutrients provided by different foods. Nutritional information must be coordinated and subject to prior training to achieve this balance and both must be agreed upon by all the people involved (scientists, producers, sociologists, legislators, etc.), in such a way that there is coherence in the basis of food policies and their impact on citizens in the major economic-social regions of the globe (EU, USA, Latin America, Asia, and Africa).

A variety of frontal labels are proposed, among which "Nutri-Score" stands out due to its greater diffusion and the scientific rigour in its specific valuation of the product, but they are not accompanied by adequate consumer training, so they introduce confusion and can backfire. Its contribution, as supplementary information, should be coordinated with the mandatory nutritional labelling established by law for all products in accordance with current legislation. The adequacy of a food to a diet depends on so many factors that it may not be possible to make it as simple as proposed by the Nutri-Score label or the like.

A unique model would be essential for each defined food culture macroenvironment (i.e. North / Central / South Europe). Front of pack labelling can be used as complementary information to the diet including all kinds of products and not just packaged food. However, when used only for packaged food, to compare products of the same category, its contribution to the design of personal diet is minimal. Thus, the above cited AESAN's Report mentions that only the proposals from Denmark, Iceland, Lithuania, Norway and Sweden (Keyhole Logo), Croatia (Healthy Living Guaranty Mark) and Israel (Green Endorsement Logo) try to consider all kinds of products in addition to packaged ones, but without giving more details.

From the EU Commission's Report, which has been extensively quoted, it is important to reflect on the first sections of its conclusions: «... they are assessment systems based on models of nutritional pro-

files. As for the possible effects of labels on the food and health of consumers, there is not enough empirical evidence ... it can cause costs for companies, as well as confusion and lack of confidence on the part of consumers».

The Commission (11.12.2018) focuses on recommending the application of the European Green Pact: «Actions will be proposed to help consumers choose healthy and sustainable diets. In particular, the Commission will explore new ways to better inform consumers about the nutritional value of food». In this sense, there is a flagrant contradiction or an oversight: how will the coexistence between the support of the European Green Pact and the concepts of proximity food, fresh products, local markets or bulk sales be coordinated, with a support programme for nutritional labelling that only compares a portion of the components involved in a diet?

Public health is a fundamental right and should be focused on this vision. This is achieved through coordinated actions, based on a matrix programme, to advance towards the sustainability of the planet (United Nations Sustainable Development Goals, especially 1, 2 and 3). Food and its contribution to health have a global interaction, there is a link between science and culture (UNESCO), availability and accessibility (FAO) and health (WHO). Front of pack labelling should be considered with a global universal strategy and with the aim of promoting food culture in the public, as the first step to enable them to interpret and define their needs and act accordingly. However, it is surprising that, in the number of existing debates and documents, there are very few references to the need for basic training. Only the WHO has already made clear the need to «put in place an easy-to-interpret front-of-pack labelling supported by public education» in its March 2016 Report¹². This instruction is comprehensive, clear and concise. Reflection that repeats the aforementioned EU Commission's Report on FOPL, leaving the responsibility to governments.

It would be appropriate for this harmonized legislation to be proposed and adopted with some speed; as if were based on solid and reliable scientific agreements, taking into account its sociological aspects,

¹¹ The information and conclusions correspond to the situation on the date of the Report (Summer 2020) - Translated to English - Fall 2020

¹² See https://www.who.int/end-childhood-obesity/en/

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after an objective and balanced consultation of the interested parties.

Looking to the future, the subject at hand must be a fundamental element of the food policies of every society. Institutions must develop programmes which harmonize with food cultures.

The described experience evidences the need to promote the TRAINING of the public, agreed between all the people involved in the system (scientists, producers, sociologists, legislators, etc.), and thus offer educational information in the most efficient way, already started in school and in a coordinated and continually adapted way. This should lead to a change in consumption habits based on an adequate food choice, which will form a healthy and sustainable diet based on proven scientific knowledge. The public should be able to interpret any additional information. Front of pack labelling must be integrated into the global information of all products; otherwise, its effectiveness may be questionable and/or counterproductive.

The realization of these concepts is a fundamental component of the development of an adequate diet for the population.