

Report of the Scientific Committee of the Spanish Agency for Food Safety and Nutrition (AESAN) on the criteria required to promote the reduction of the contents of certain nutrients in processed foods, which is considered a matter of interest for public health

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Abstract

The Executive Director of the Spanish Agency for Food Safety and Nutrition (AESAN) has requested advice from the Scientific Committee with regard to establishing criteria or models that encourage the reduction of the contents of certain nutrients present in foodstuffs and, where appropriate, defining the nutritional range to be applied in the use of incentives to promote such reductions.

After examining the scientific evidence available, the Scientific Committee has concluded that the nutrients associated with an increased risk of developing chronic illnesses if consumed in excess of established nutritional recommendations include saturated and *trans* fats, sugars and salt. Due to their actual content or even the fact that they are frequently consumed, processed foods in many cases are the main source of such nutrients. Therefore, it is thought that the model ought to focus on the reduction of these nutrients in processed foods.

We propose a model based on the establishment of a distinguishing symbol or mark for processed foods that, within their category: a) have implemented a reduction of least 30% in their saturated fat and sugar content and a reduction of 25% in their salt content; b) do not exceed the average content of the other nutrients included in this outline and; c) comply with the nutritional profiles set out in Article 4 of Regulation (EC) No 1924/2006 (EU, 2006).

The model expects to: a) have the power to bring about improvements in the nutritional composition of food products by encouraging innovation within the food industry in Spain; b) be of use to consumers in helping them to make healthier food choices.

A platform is also envisaged that will ensure that the proposed model is objective and transparent in terms of rules of use, simple for the agro-food industry to implement, and easy for public administrations to monitor.

Key words

Processed foods, food labelling, saturated fat, salt, sugars, reformulation.

Purpose of the report

The World Health Organisation (WHO) (WHO, 2004) (WHO, 2008a) (WHO, 2008b) and the Directorate General for Health and Consumer Protection of the European Commission (DG SANCO) (Commission of the European Communities, 2007) recommend the introduction of national strategies to limit the consumption of certain nutrients (saturated and *trans* fatty acids, sugars and sodium) that if consumed in excess contribute to an increase in the prevalence of chronic diseases related to inadequate diet, particularly obesity (Mozaffarian et al., 2011), diabetes (Salas-Salvadó et al., 2011), arterial hypertension (He and MacGregor, 2009), cardiovascular disease (Mente et al., 2009) (Bhupathiraju and Tucker, 2011) and certain types of cancer (Huxley et al., 2009) (Brennan, 2010).

Processed foods, either because of their content or because of the frequency with which they are consumed, are in many cases the leading source of these nutrients, which when eaten in excess are responsible or partly responsible for the onset of the abovementioned diseases. This means that initiatives designed to encourage the population to reduce their consumption are only effective if they include coordinated action between the health administration and the food industry, directed at reducing the content of these nutrients in processed foods and at improving the information made available to consumers.

As part of the strategy for nutrition, physical activity and the prevention of obesity (NAOS) in Spain, several collaboration agreements were signed with different business organisations representing the food industry, distribution and catering sectors in February 2005, the content of which included improvements in the composition of foods. This experience, which broadly speaking was satisfactory for both parties, nevertheless had two weaknesses:

- The agreements lacked specific objectives, which prevented subsequent quantitative evaluation, except in the agreement between Spanish Confederation of Bakers (CEOPAN) and the Spanish Association of Manufacturers of Frozen Dough (ASEMAC).
- Incentives for the more committed companies were not considered, which may explain many companies' lack of motivation to fully take part in the initiative.

These collaboration agreements expired in 2010 and they have not been renewed since. In the absence of a collective agreement, the Spanish Agency for Food Safety and Nutrition (AESAN) has decided to adopt a different approach, for which it has requested the advice of the Scientific Committee concerning the most suitable model for encouraging improvements in the composition of foods based on the content of certain nutrients of interest for public health. This model should be:

- Able to bring about improvements in the nutritional composition of foods,
- Realistic about the existing situation in the current market,
- Suitable for fostering innovation,
- Objective and transparent in its regulations for use,
- Easily applied by companies and easily monitored by administrations,
- Useful to consumers.

The Scientific Committee has been asked to advise the AESAN on the most suitable criteria or models for encouraging a reduction in the content of certain nutrients present in food products.

Nutrients of interest for public health whose intake should be reduced

The quality of human health is determined by the intake of nutrients. Dietary patterns consist of a variety of foods and beverages that, when considered together, should provide a supply of energy and nutrients consistent with the criteria for a healthy diet. However, there is now sufficient scientifically proven evidence to indicate that in industrialised countries such as Spain, certain nutrients are consumed in excess, and this dietary imbalance is associated with an increased risk of obesity and chronic non-communicable disease (diabetes, arterial hypertension, dental caries, cardiovascular disease and certain types of cancer). Saturated and *trans* fatty acids, sugars and salt comprise the primary nutrients which when consumed in excess of the established nutritional recommendations are associated with an increase in the risk of developing the abovementioned chronic diseases (WHO, 2003) (EFSA, 2008).

Therefore, the establishment of strategies to reduce the intake of these nutrients among the general population is considered a priority. The best way to reduce the intake of these components is to limit the intake of foods that contain high levels of them. The different diagrams used to represent the recommended levels of consumption for the different food groups (pyramids, wheels, plates, etc.) are consistent in recommending that people eat more fresh foods than processed foods which, in many cases, have a high content of fats, sugars or salt. It is essential to insist on the consumption of fresh foods while limiting the intake of processed foods, a message which can be reinforced through improvements in the composition of foods consisting of reducing the content of these nutrients.

The Scientific Committee of the AESAN is aware that there are also some components in foods, for example dietary fibre and other nutrients (certain vitamins and minerals), whose intake should be encouraged by promoting the consumption of foods which naturally contain these components or by increasing their content in certain food products. However, given the complexity of establishing limits to encourage improvements in the composition of food, initially it is considered sufficient to focus solely on those nutrients consumed in excess by some of the population.

The following section describes the nutrients which are the focus of this report as well as the viability of and justification for reducing their content in foods from the viewpoint of public health.

1. Saturated and *trans* fatty acids

It is widely acknowledged that replacing carbohydrates or unsaturated fats with saturated fats leads to an increase in LDL cholesterol concentrations, which has been shown in both humans and animals used in research (Siri-Tarino et al., 2010). The capacity of saturated fats to raise serum cholesterol levels is increased by a high intake of dietary cholesterol. In addition, certain studies suggest that saturated fats may reduce insulin sensitivity (Risérus et al., 2009), promote inflammation (Bulló et al., 2007), encourage oxidative stress (Perez-Martinez et al., 2010) and have deleterious effects on blood pressure and vascular function, although the data available to date are not conclusive (Siri-Tarino et al., 2010). Therefore, it is generally believed that the consumption of saturated fats and cholesterol is

associated with an increase in the risk of arteriosclerotic cardiovascular disease (Siri-Tarino et al., 2010). This evidence, together with the inferences from epidemiological and clinical studies, has led to recommendations in recent years to reduce the intake of saturated fats and cholesterol as a public health strategy to prevent cardiovascular disease.

The replacement of saturated fats with unsaturated fats has been associated with a reduction in LDL cholesterol serum levels, and recently, through a meta-analysis of random clinical studies, it has been associated with a lower risk of coronary disease (Mozaffarian et al., 2010). However, substituting saturated fats with refined carbohydrates and added sugars is not only associated with a greater risk of cardiovascular disease (Hu et al., 1997), but also increases levels of triglycerides and small dense LDL particles, and reduces concentrations of HDL particles. These are undesirable effects in the context of the rising prevalence of obesity and insulin resistance (Parks and Hellerstein, 2000) (Schaefer et al., 2009). Therefore, the public health strategy of recommending reduced quantities of saturated fats in foods should be linked to a strategy of recommending reduced quantities of added sugars in foods as well.

The FAO (Food and Agriculture Organization), having analysed the scientific evidence related to saturated fats, came to several key conclusions: a) there is convincing evidence to confirm that the replacement of saturated fats with unsaturated fats reduces the risk of coronary disease; b) there is considerable evidence that would confirm that replacing saturated fats with refined carbohydrates does not negatively affect the possibility of developing coronary disease and may even foster the development of metabolic syndrome; c) there is a possible positive relationship between the intake of saturated fats and an increase in the risk of diabetes; d) there is insufficient evidence to confirm that replacing saturated fats with monounsaturated fats or carbohydrates from wholegrain cereals reduces cardiovascular risk, although some indirect studies have suggested this (FAO, 2008).

The excessive consumption of *trans* fats in processed foods has also been associated with metabolic disturbances including alterations to the lipid profile, systemic inflammation, weight gain, disturbances to the homeostasis of glucose, endothelial dysfunction, and an increased risk of cardiovascular disease and diabetes (Micha and Mozaffarian, 2009). However, the Scientific Committee of the AESAN (AESAN, 2010) recently found that the content of *trans* fats in the Spanish diet has decreased in recent years, and that the content of *trans* fats in the majority of processed foods currently available in Spain is relatively low. Therefore, the subject of *trans* fats is not considered to be a priority in this report.

According to the ENRICA study (Study on Nutrition and Cardiovascular Risk in Spain), saturated fats account for 11.6% and 11.9% of the calories in the diet of Spanish women and men respectively (ENRICA, 2011), figures which are higher than the recommended average intake (<10% of energy) established by organisations such as the FAO (FAO, 2008). The study found that the main sources of saturated fats in Spain are cheeses (16.3% of the total), processed cold meats and sausages (14.6%), milk and dairy products (11.6%) and pastries, cakes and biscuits (11.6%). Other major sources of saturated fats in unprocessed foods include red meats (11.98%) and vegetable oils (9.64%). Given the high levels of saturated fat intake in Spain, it is essential that the food industry offers more and more products with a lower content of saturated and *trans* fats.

2. Added sugars

The potential effect of the increase in the consumption of sugars on the development of some of the more prevalent diseases in developed and developing countries in recent years has been the subject of much debate. In Europe, for the purposes of nutritional labelling, "sugars" are defined as all monosaccharides or disaccharides present in food, regardless of their origin (excluding polyols, which are sugar alcohols) (EU, 1990). Sugars are naturally found in fruit (for example fructose) and in milk and derivatives (lactose). A large portion of the sugars consumed in industrialised countries such as Spain come from the sugar added during food processing, preparation or even at the table. These added sugars sweeten foods and beverages and give them flavour. They are also added to foods to preserve them or to give them attributes of technological functionality such as viscosity, texture, consistency and/or browning. Although the metabolic response of the human organism does not depend on the type of sugar consumed, the sugars naturally present in foods, in contrast to added sugars, are part of the nutrient package of each food. On the other hand, many processed products which contain added sugars contribute to increasing the supply of energy, while providing few essential nutrients or fibre. The United States Department of Agriculture defines added sugars as all sugars used as ingredients in processed and prepared foods (for example, breakfast cereals, pastries, soft drinks, jams and ice creams), and the sugars eaten separately or added to food at the table (Otten et al., 2006). More specifically, added sugars include white, brown and natural cane sugar, corn syrup, high-fructose corn syrup, malt syrup, maple syrup, solid fructose, liquid fructose, honey, anhydride and crystalline dextrose (Otten et al., 2006).

The intake of food with significant quantities of sugars has been linked to an increased risk of dental caries; obesity; a deficiency of certain vitamins, minerals or fibre; a modified plasmatic lipid pattern; insulin resistance, and a higher risk of diabetes; metabolic syndrome; and certain types of cancer (EFSA, 2010a).

After analysing the available scientific data, the European Food Safety Authority (EFSA) recently confirmed that there is sufficient evidence to conclude that frequent consumption of foods containing sugars (natural or added) increases the risk of dental caries, especially when oral hygiene and fluoride prophylaxis are inadequate (EFSA, 2010b).

In the same report the EFSA states that the evidence linking a high sugar intake (especially added sugars) to increased weight, compared to a high intake of complex carbohydrates, is inconsistent in the case of solid foods. However, some evidence suggests that a high sugar intake in the form of sugared drinks may contribute to weight increase and thereby partly explain the obesity epidemic. The intake of sugars in significant quantities may also have other deleterious metabolic effects on cardiovascular risk indicators (revised by the EFSA, 2010a). For example, some evidence links the high intake (>20% of energy consumed) of sugars to an increase in serum concentrations of triglycerides and cholesterol, and that an intake of 20-25% of energy consumed in the form of sugar may alter the glycaemic and insulinaemic response to diet (Reiser et al., 1979) (Reiser et al., 1981), increasing the risk of metabolic disease.

Studies have shown that diets containing high quantities of added sugars may be deficient in fibre or certain micronutrients, particularly in children and the elderly (Lyhne and Ovesen, 1999) (Beck and

Ovesen, 2002) (Frary et al., 2004) (Kranz et al., 2005). However, the EFSA recently concluded that the negative association frequently observed between the intake of added sugars and the density of micronutrients in the diet depends more on the pattern of consuming foods containing higher quantities of added sugars than on the quantity consumed (EFSA, 2010a).

According to the recent ENRICA study, the average Spaniard consumes a total of 111.2 g of sugars per day, representing 18.2% of caloric input, which exceeds the average intake recommended by the WHO (<10% of total energy) (Nishida et al., 2007) or by national organisations such as those in Scandinavian countries or the United Kingdom (revised by Palou et al., 2009). Added sugars, according to the ENRICA study, account for 5.2% of the total calories in the average Spanish diet. The intake of added sugars is on the rise, and the main sources of added sugars in Spain include soft drinks (23.0%); yoghurts, fermented milk products and milk-based desserts (22.3%); pastries, cakes and biscuits (16.9%); fruit juices and nectars (11.9%); and chocolate and chocolate-based foods (11.4%). A reduction in the intake of these sources of added sugars would lead to a reduction in the caloric content of the diet without affecting its nutritional suitability.

3. Sodium (salt)

Sodium is an essential nutrient for the human organism, but is required in relatively small quantities. The majority of sodium is consumed in the form of sodium chloride (salt). Unfortunately, in recent decades, the consumption of sodium chloride in food has increased enormously, giving rise to a growing problem for public health.

The importance of reducing the intake of salt for the prevention of cardiovascular disease is widely documented. The WHO estimates that arterial hypertension is responsible for 13% of global mortality (WHO, 2007) (WHO, 2010). There is adequate scientific evidence to suggest a dose-response relationship between the consumption of salt and blood pressure levels in the population (Denton et al., 1995) (Sacks et al., 2001). Several studies have established that the quantity of salt consumed is an important risk factor in the development of arterial hypertension (Appel, 2009) (Sttzalutto et al., 2009). The risk of cerebrovascular disease increases progressively when systolic blood pressure figures rise above normal (120-140 mmHg) (MacMahon, 1990). There is a direct and linear link between blood pressure levels and mortality due to cerebrovascular accidents and coronary disease (Lewington et al., 2002). In addition, a reduction in salt consumption in the population would lead to a reduction in blood pressure levels, an increase in the efficiency of hypertension treatment and decreased long-term risk of cardiovascular events and cerebrovascular accidents (Appel, 2009). It is estimated that reducing the salt intake of a population from 10 g to 5 g per day could lead to a 23% decrease in the rate of cerebrovascular accidents and a 17% decrease in cardiovascular disease (Kranz et al., 2005) (Karppanen and Mervaala, 2006) (Cook et al., 2007), thereby contributing to a significant reduction in mortality.

According to the WHO, the reduction in the population's salt intake is one of the simplest and most cost-effective ways to reduce the current prevalence of cardiovascular disease and should therefore be considered by public health authorities. The Nutrition and Physical Activity Group of the European Commission, in which each of the member states is represented, has undertaken to reduce the salt content in food products by at least 16% (EC, 2009).

Spaniards consume an average of 9.8 g of salt per day (Ortega et al., 2011), almost double the quantity recommended by the WHO as healthy (not more than 5 g salt/day) (WHO, 2003), and it is estimated that 88% of the population consumes more salt than recommended (Ortega et al., 2011). This level of consumption is one of the highest among the European Union countries.

Similarly, it is estimated that approximately 65-70% of the salt consumed comes from foods that are processed and eaten away from home. The salt included in processed foods is known as "hidden" salt, as individuals are not aware of the quantity of salt they consume and their efforts to reduce salt intake are limited by the salt content in processed products.

The intake of salt in Spain is increasing. The quantity of salt added to home cooking and at the table is minor compared to that consumed in processed foods, contributing in small quantities to the total intake of the average Spaniard. Although salt is found in a wide variety of processed foods, according to the recent ENRICA study the primary sources are bread-based products (33.6%), cold meats and sausages (21.0%), and cheeses (5.83%).

As bread accounts for most of the salt in the average Spaniard's diet, the AESAN agreed with the Spanish Confederation of Bakers (CEOPAN) and the Spanish Association of Manufacturers of Frozen Dough (ASEMAC) to voluntarily and gradually reduce the sodium content in bread. More specifically, it was agreed that the proportion of salt used in the preparation of bread would be reduced, going from 22 g of NaCl/kg of flour to a maximum of 18 g of NaCl/kg of flour over a four-year period, thereby decreasing salt content by 1 g per year.

Salt is used as a food ingredient, as a preservative, in curing meat and in baked goods to disguise unpleasant flavours, to enhance the retention of moisture and to bring out flavours. Although in some cases it is impossible to reduce the salt content in some foods, in many others it is possible to produce processed foods with lower sodium contents.

Models to encourage improvements in the composition of foods: recommendations of the Scientific Committee

Various different models are used around the world to encourage improvements in the composition of foods (EFSA, 2008). In Europe two models are generally employed: a) the use of distinctive symbols in food labelling which identify products in each category whose composition is considered healthy and b) the use of legends in the labelling or advertising of a product describing the nutritional improvements that have been made to the product. The first group is represented by the Keyhole symbol (the Norwegian Directorate of Health and the Norwegian Food Safety Authority, 2009), used in Scandinavia, whereas the second option is controlled in Europe by Regulation (EC) No 1924/2006, on nutrition and health claims made on foods (EU, 2006).

The Keyhole symbol identifies products which contain low levels of fat, sugars, salt and/or more fibre than those in the same category that do not bear this distinctive symbol. This allows consumers to collect a basket of healthy foods, dealing with the reformulation of foods product by product rather than nutrient by nutrient. By establishing low nutrient levels from the start, this model does not lead to a progressive reduction in the content of fats, sugars or salt, which may discourage many producers. In addition, by recognising the product as healthy, it excludes certain categories of food from qualifying, which may limit its impact.

The Regulation on nutrition and health claims made on foods permits the use of legends or symbols in labelling and advertising that provide information on reductions in the content of fats, sugars or salt when such a reduction is considered significant. A significant reduction consists of a decrease in fats and sugars of at least 30% and a decrease in salt of at least 25% compared to a similar product in the same category. In this model, the product is not identified as healthier but is labelled to indicate that the composition has been improved by reducing the quantity of a certain nutrient. This helps to prevent the distinction between good (healthier) and bad (less healthy) and can be used in all categories of products containing salt, fat and/or sugar, provided that the content meets the established values.

However, the use of these reduced content claims has not yet become common practice in Spain. This may be due to the lack of attraction for the consumer as well as other reasons which have not yet been clarified. The Scientific Committee therefore considers the AESAN's proposal of applying the model established by the Regulation on nutrition and health claims to be acceptable. The model should be reinforced with the use of a new distinctive symbol on the label which, as it is backed by a health administration, may be sufficient stimulus for companies to modify the composition of their products towards a guided and progressive improvement in the composition of foods.

Terms and conditions for the use of the distinctive symbol

The use of a distinctive symbol in the labelling and advertising of the foods established by the AESAN shall comply with that established in Regulation (EC) No 1924/2006 on nutrition and health claims made on foods and, moreover, shall be based on the following premises:

- a) The foods to be considered are processed foods prepared by the food industry, as these are the source of a large quantity of the fats, sugars and salt consumed, and which in many cases can be reduced. On the other hand, the distinctive label will not be applied on fresh products (fruit, vegetables, unprocessed meats and fish, etc.), as the nutrient content is inherent to these foods and is not intended to be reduced.
- b) The label will be applicable to food products which significantly reduce or have reduced the content of saturated fats, sugar or salt compared to the average in that category, as these nutrients have been found to be consumed in excess of the established recommendations and can lead to the development of chronic non-communicable diseases.
- c) The food categories should be established according to their similar nutritional composition and the possibilities for improvement by the food industry.
- d) To establish these limits within the same category, the AESAN will require a database of the composition of processed foods. Each category of foods should be made up of the nutritional composition of at least five products.
- e) As an exception, certain categories of food will not be eligible for the distinctive symbol due to their low nutritional density or other nutritional criteria.
- f) According to the criteria established in Regulation (EC) No 1924/2006 on nutrition and health claims made on foods, the distinctive symbol may be used for products containing a salt content of 25% less or a fat and/or sugar content of 30% less than the average value of products in the category to which they belong, in accordance with the values published by the AESAN for each

category. This ensures that products which have already reduced the contents of these components are not at a disadvantage compared to those which have only recently implemented a reduction.

- g) The average contents of saturated fats, sugar or salt for each food category used to calculate eligibility for the distinctive symbol should be updated at least every four years. Therefore, the use of the distinctive symbol should be authorised for periods of fewer than four years from the start of this plan.
- h) As the products with the distinctive symbol on the label may be perceived by consumers as better, there is a risk that some products which have a low enough level of the nutrient considered to qualify for the symbol may nevertheless contain higher quantities of saturated fats, sugar or salt. The label would therefore encourage the consumption of these products, thereby increasing the total intake of the nutrient and producing an undesirable collateral effect. To avoid this situation, foods which are eligible for the distinctive symbol because they have significantly reduced the level of a specific nutrient, at the same time must not exceed the average content for the rest of the nutrients considered in this scheme for their category.
- i) The intake of *trans* fats is low in Spain (AESAN, 2010) thanks to the efforts of the food industry in recent years, although there are still some products with a high *trans* fat content on the market. In addition, many of the foods which may contain *trans* fats would not be eligible for the distinctive symbol due to their high content of saturated fats or sugars. Moreover, there is already a legal framework in existence which establishes the reduction of *trans* fats (BOE, 2011). Given this situation, it appears to be unnecessary to consider limits for *trans* fats in the scheme of incentives.
- j) To guarantee objectivity and transparency in the process for granting the right to use the distinctive symbol established by the AESAN, the conditions of access to the symbol and the database showing the average values in each food category should be published at least on the AESAN website. The same website could also publish a list of the products that have been granted the use of the distinctive symbol. This will help administrations and interested consumer associations to follow and monitor these products.
- k) The foods which, depending on the established model, are eligible for the distinctive symbol must in all cases comply with the nutritional profiles established in accordance with article 4 of Regulation (EC) No 1924/2006.

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