
Healthy nutrition: a closer look at logos





To the Minister of Health, Welfare and Sport

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Dear Minister,

On 5 June 2007 you asked the Health Council of the Netherlands for advice with regard to logos on food products. A special Health Council committee has spent the past year examining the extent to which the existing logos promote healthier eating patterns. The findings of this committee, which I chaired, have been reviewed by two permanent committees of experts within our organisation: the Standing Committee on Nutrition and the Standing Committee on Public Health. It is my pleasure to present you with the resultant advisory report. I am today also forwarding the report to your colleague at the Ministry of Agriculture, Nature and Food Quality.

The Committee believes that univocal nutritional advice is of utmost importance to the consumer. This consistency is currently lacking. In particular, the allocation of the *Choices stamp* and the *Healthy Choice Clover* are based on two different sets of criteria – neither of which is sufficiently attuned to the general public education on healthy eating.

The Committee therefore makes concrete recommendations to improve the situation. It advocates a single logo, which should be granted according to criteria that are consistent with the nutritional advice issued by the Netherlands Nutrition Centre. The form of the logo on products that are healthiest in terms of their composition ought to differ from the form used on products whose composition is reasonably good.

The use of logos as a means of drawing attention to healthy products is an interesting development, which could potentially have public health benefits. Based on the current level of knowledge, however, it is impossible to say whether logos do, in fact, help to improve eating patterns and promote the development of healthier products. It is plausible, however,

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that the logos may influence product development. Furthermore, scientific knowledge concerning the effects of the logos on consumer behaviour is still very limited at the present time. Many relevant questions have yet to be investigated.

A regular update on knowledge development within this field is therefore desirable, not least in the light of the current European debate on the implementation of the regulations concerning health claims and nutrition labelling on food products. Given the great interest in these issues in Europe, this report is being published simultaneously in Dutch and English.

I trust that this advisory report will afford you insight into the way in which logos are currently granted. It will also provide guidelines on the role that logos can play in the provision of consistent advice on healthy eating.

Yours sincerely,

prof. dr. ir. D. Kromhout
Vice president

Healthy nutrition: a closer look at logos

to:

the Minister of Health, Welfare and Sport

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The Health Council of the Netherlands, established in 1902, is an independent scientific advisory body. Its remit is “to advise the government and Parliament on the current level of knowledge with respect to public health issues...” (Section 22, Health Act).

The Health Council receives most requests for advice from the Ministers of Health, Welfare & Sport, Housing, Spatial Planning & the Environment, Social Affairs & Employment, and Agriculture, Nature & Food Quality. The Council can publish advisory reports on its own initiative. It usually does this in order to ask attention for developments or trends that are thought to be relevant to government policy.

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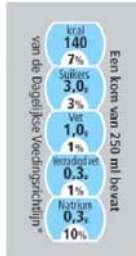
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Executive summary

Food companies have various ways of indicating that certain products are good for one's health. Logos for this were introduced in the Netherlands several years ago.



The Choices stamp is an initiative by Unilever, Friesland Foods and Campina. More than one hundred companies now participate in this initiative and many of these companies have products that carry the Choices stamp. The Healthy Choice Clover is an initiative by Albert Heijn. Only the Own-Brand products of this supermarket chain are eligible for the Healthy Choice Clover. Each of these logos is awarded according to their own set of criteria.



Another way of informing people about the nutritional value of food products is by listing the levels of nutrients (nutritional information) on the product packaging. Recently a new format has been introduced to present this information front-of-pack, the so-called GDA system. This system was developed by the European umbrella organisation of the food industry.

The use of logos provides opportunities for improving dietary habits and public health. Whether this will actually occur, depends on three aspects. Are the logos assigned according to sound criteria? Do the consumers use this information correctly when choosing products? Do the logos stimulate manufacturers to improve their range of products? In this advisory report, the two existing Dutch logos will be compared on these points based on the current state of scientific knowledge.

This advisory report also contains an evaluation of the GDA system. This system differs fundamentally from the logos, because nutritional information may be listed on every product and still requires interpretation by the consumers, whilst the logos create the direct message that the product can contribute to a healthy eating pattern, because they are only featured on products that meet the criteria for that logo.

The logo criteria do not sufficiently tie in to the food education

In the Netherlands, the general public education on healthy eating is organised by the Netherlands Nutrition Centre. This is based on the Guidelines for a healthy diet 2006 of the Health Council. The committee is of the opinion that the message communicated by the logos should be consistent with this general food education. Therefore, the committee has compared the criteria for awarding these logos with the evaluation of the health value of food products by the Netherlands Nutrition Centre.

The food education by the Netherlands Nutrition Centre is based on assigning all food products into three categories: 'preferable', 'in moderation' and 'occasionally'; the criteria on which these three categories are based have been described in the Food-Based Dietary Guidelines report. For example, wholemeal bread is put in the category 'preferable', brown bread in the category 'in moderation' and white bread in the category 'occasionally'. As the current logos divide food products into two instead of three categories (products either have the logo or they don't), the committee is of the opinion that the criteria for awarding the logos should be consistent with the 'preferable' category used by the Netherlands Nutrition Centre. Currently, certain 'in moderation' products and even some products that should only be eaten occasionally can be awarded a logo. Based on this starting point, the committee has concluded that the current criteria for awarding the logos must be tightened.

For the Choices stamp, especially the criteria for dietary fibre, the criteria for the saturated fat and added sugar levels of dairy products and the criteria for the calorie content of soups, sauces, snacks and biscuits should be tightened. In the case of the criteria for the Choices stamp, the existing range of products forms

the most important starting point* and not – as for food education – current eating habits in the Netherlands and the desired improvements. This is probably the most important cause of the discrepancies.

In assigning the Healthy Choice Clover, the main problems are the criteria for sodium (table salt), trans fats and ready-to-eat meal products and the lack of criteria for the calorie content of soups and sauces.

The GDA system does not sufficiently tie in to the Dutch Guidelines for a healthy diet 2006

The GDA system provides information about the levels of one or more nutritional factors in a portion of the product. Currently, a manufacturer wishing to display the GDA system on the packaging of a food product has three options: presentation of the calorie content only, presentation of the amount of calories, total fat, saturated fat, total sugar and sodium, or presentation of these five levels plus the fibre content.

The committee is of the opinion that the GDA-system should contain the nutritional factors which, according to the Guidelines for a healthy diet 2006, are of importance for evaluating the health benefits of foods. The total fat content and total sugar content are important for health, because fats and sugars contain calories. However, the GDA system already states the amount of calories in a portion of the food product. People wishing to reduce the number of calories that they consume should, according to the Guidelines for a healthy diet 2006, focus especially on unhealthy fats (saturated and trans fat), added sugar and sugar-rich drinks. The committee recommends for the GDA system to include the following six nutritional factors as a standard: calories, saturated fat, trans fat, free sugars, sodium and fibre. Of these six, dietary fibre is the only one of which consumption should be promoted. The consumption of saturated fat, trans fat, free sugars and sodium should be limited. This also applies to calories for people who are overweight.

The committee endorses the reference values used to calculate the GDA percentages for calories, saturated fat and sodium. The committee urges that the ref-

* The criteria for the Choices stamp are aimed at being attainable for approximately 20 percent of the basic food products and approximately 10 percent of the non-basic food products. The basic food products are vegetables, fruit, bread, potatoes, pasta, rice, legumes, fish, meat (products), poultry, eggs, meat substitutes, dairy, spreadable fats, cooking fats and drinks. They are essential for the provision of nutrients such as vitamins and minerals, this in contrast to non-basic food product groups such as snacks, biscuits, sweets, sauces and soups intended as a starter or snack.

erence value for dietary fibre be increased to the level of the Netherlands fibre guideline and has proposed reference values for free sugars and trans fat.

Little is currently known about how consumers use the logos and the GDA system

The scarce data available indicates that most consumers know that the logos are linked to health in one or another way. A lack of peer-reviewed research makes it impossible to determine whether consumers' eating habits have become healthier as a result of the logos. This requires more research, for example into potential misconceptions.

In the case of nutritional information, it is left to the consumer to determine how healthy or unhealthy a product is. There are indications that fewer than half of consumers, when asked questions about specific values in the GDA system, are able to answer these questions correctly; however, little is known about the comprehensibility of the entire GDA system. Scientific research has shown that consumers are better able to understand nutritional information and find this information more attractive when traffic light colours are used to indicate whether the values are favourable, neutral or unfavourable.

The committee sees a need for further research into the comprehensibility of the logos and the GDA system and the way in which consumers use this information when making product choices.

A favourable effect on product development is plausible for the logos, but not for the GDA system

It is not clear whether the option of placing a logo on food product packaging will stimulate the industry to improve the composition of their products or to develop healthy products, because there has been no scientific research on this subject. Based on information gathered from hearings with manufacturers and organisations involved, the committee does deem this incentive to be plausible for the logos. The hearings provided no consistent indications of an effect for the GDA system on product development.

A sketch of the ideal situation

According to the committee, the ideal situation would be as follows. In the Netherlands, there would be one logo for the promotion of healthy food choices, which would tie in seamlessly with the general public education on healthy eat-

ing. All products that meet the criteria will carry this logo, so that not only the presence, but also the absence of the logo will provide information about the health benefits of the product. In addition, the nutritional information – which allows consumers to evaluate the health benefits of the product – would be listed on the front of the packaging on all products (irrespective of whether it carries a logo).

A plea for one single logo with two different manifestations

According to the committee, consistency between the logos and the general public education on healthy eating is the main priority in creating clarity for the consumers. As long as there is no convincing evidence that consumers are able to handle logos that indicate whether or not the product is relatively healthy within its own product group, the committee is of the opinion that logos should only be awarded to healthy products.

If the current logos are maintained, in which products are divided into two groups (with and without logo), the committee is of the opinion that only products that are preferable according to general public education on healthy eating should be eligible for the logo. This choice most closely matches that of the Dutch Guidelines for a healthy diet 2006. This means that the logo criteria will have to be substantially tightened and the objection is that a large number of products will lose the logo. This may affect consumer confidence in the logos, is bad for the potential effect on product development and is also unfavourable for the consumer, because there will be less choice within the logo range.

Therefore, the committee urges the development of a logo with two manifestations, in which one form is used for food products that should preferably be eaten, according to the food education and the other form for the products in the ‘eat in moderation’ category. A condition for this system would be that research would have to determine whether such a logo with two manifestations would be sufficiently understandable to the consumer. Application of the logo with two manifestations would allow the range of logo products to be maintained, without this affecting the educational message.

The GDA system requires modification

The committee is of the opinion that the GDA system should contain standard information about the amount of calories, saturated and trans fats, free sugars, sodium and dietary fibre. The committee recommends that a colour code indicates whether levels in the product are favourable, neutral or unfavourable levels.

Without such a colour code the GDA system will not be understood properly. The committee recommends to study how such colour code should be used in order to make the GDA-system more comprehensible.

The information about logos and the GDA system to the consumer must be improved

The committee recommends that a new information system will be drawn up for consumers, in which the logos and the GDA system are explained in reference to the general public education on healthy eating. Such a system should also pay attention to the importance of a healthy diet and sufficient physical activity. The system should be accessible to all and should be maintained centrally.

Introduction

Nutrition is important for health: it can make people healthier, but it can also cause harm. In 2006 the Health Council of the Netherlands published its advisory report Guidelines for a healthy diet 2006, in which the most important points were listed and the importance of adequate physical exercise was emphasised.^{1,2} The guidelines regarding the dietary pattern refer partly to foodstuffs (vegetables, fruit, whole grain products and fish), but also partly to nutrients (unhealthy fats, salt, sugars, alimentary acids and alcohol). However, consumers do not buy nutrients, they buy foodstuffs. Therefore, in the education for consumers on healthy eating, the guidelines on nutrients are translated into guidelines about healthy product choices. The food education describes the desired amounts and composition of the consumed foodstuffs.

Consumers are informed about the health aspects of foodstuffs in various ways. Manufacturers make 'claims' on the product packaging – usually a short sentence – about the composition ('contains extra calcium') or the effect ('boosts natural defences') of products. Logos are a relatively new development: The Choices stamp and the Healthy Choice Clover have been used in the Netherlands for several years now to indicate that certain products have a relatively favourable nutrient composition. Another new development is that an increasing number of foodstuffs carry simplified information about the levels of certain nutrients (the nutritional value of the product) on the front of the packaging (front-of-pack). This advisory report pertains to both of these new developments.

Although logos* and nutritional information** have the same purpose, there are two fundamental differences. Firstly, logos contain no product specific information, whilst the nutritional information does. Secondly, logos are only placed on products that meet certain criteria, whilst nutritional information can be provided on all products.

In this advisory report, the Health Council will evaluate the logos and the new form of nutritional information based on the current state of scientific knowledge. Logos offer a chance to improve the dietary pattern, but how likely is such an effect with the current Dutch logos and can nutritional information contribute to this? A complex combination of factors is involved.

1.1 Dutch logos and nutritional information

The three healthy choice promoting systems used most frequently in the Netherlands form the focus of this advisory report: the Healthy Choice Clover, the Choices stamp and the so-called GDA system.

The Healthy Choice Clover



The Dutch supermarket chain Albert Heijn introduced the Healthy Choice Clover in September 2005 in order to assist consumers in making healthier product choices. The criteria to which products must adhere in order to carry the logo are related to the levels of saturated fat***, added sugar, sodium (salt), calories and dietary fibre or fruit/vegetables. Albert Heijn only uses the logo on Own-Brand products and is not willing to share the logo with other companies.

The Choices stamp



The Choices stamp was introduced in May 2006 by three food product manufacturers: Unilever, Friesland Foods and Campina. More than 100 companies now participate in this initiative. This logo is managed by the Choices stamp organi-

* Whenever the term 'logo' is used in this report, without further specification, the term pertains to the logos that promote healthy choices.

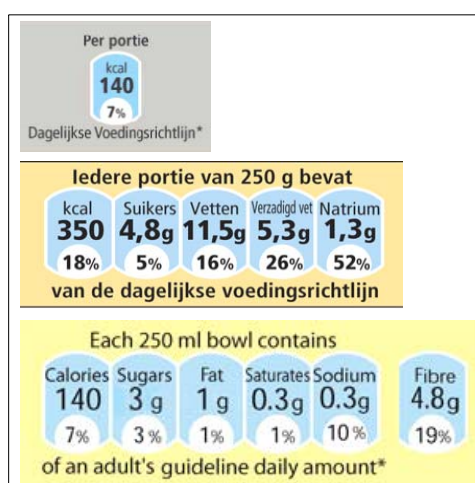
** The term nutritional information refers to the levels of nutrients in products.

*** Saturated fatty acids are referred to in this report by the abbreviated term 'saturated fat'.

sation. This organisation's scientific committee sets the criteria to which products must adhere in order to carry the logo. The criteria are related to the levels of calories, saturated fat, trans fat*, sodium (salt), added sugar and dietary fibre or fruit/vegetables. The logo may be applied by all companies under certain conditions. It can be found on branded products of various manufacturers and on Own-Brand products of some supermarkets. Several catering organisations also apply this system.

The tenth *European Nutrition Conference* in Paris, July 2007, saw the official launch of the internationalisation of the Choices stamp and the Choices International organisation was created to facilitate the global introduction of the Choices stamp. The organisation has since appointed an international scientific committee to investigate the qualifying criteria for the Choices stamp.

The GDA system



The GDA system was developed by the Confederation of the Food and Drink Industries in the European Union CIAA. GDA stands for *Guideline Daily Amount*. The Federation of the Dutch Food Industry (FNLI) also uses the Dutch term *Dagelijkse Voedingsrichtlijn*, with the abbreviation DVR. The GDA system can be placed on the packaging of all foodstuffs. A GDA icon lists the amount of a certain nutritional factor per portion and this same quantity expressed as a GDA percentage (percentage of the daily value used for this system). When

* Mono trans-unsaturated fatty acids are referred to in this report by 'trans fat'.

applying the GDA system, a company has three main options: a single GDA icon listing the calorie content or an expanded version with either five icons (energy, sugar, fat, saturated fat and sodium) or six icons (same, plus nutritional fibre). The images presented are examples of each of these three options.

The nutritional information on the back of the product packaging must conform to European regulations. The FNL I manual about the GDA system includes not only the nutritional information via the icons to be placed front-of-pack, but also the way in which nutritional information can be represented on the back of the packaging. In this advisory report, any mention of the GDA system always refers to the information given via icons on the front of the product packaging.

1.2 Foreign logos and information systems

Logos are in use in other countries too. Various logos have been developed or propagated by charitable institutions such as Heart Foundations or by government organisations, but other systems have been developed by and for specific companies. Wherever it was relevant, research into foreign logos and nutrition labelling systems has been included in this advisory report. The summary in table 1 is based on a rapport by the European Heart Network.³

Table 1 Examples of foreign logos and nutrition labelling systems.³

Logos	Nutrition labelling systems
<i>Systems developed by charities or government</i>	
<ul style="list-style-type: none"> - The green keyhole developed by the Swedish <i>National Food Administration</i>, which formed the basis for Albert Heijn's Healthy Choice Clover - The <i>Protects Health</i> logo of the Slovenian Heart Foundation - The heart logo of the Finnish Heart Foundation and the Finnish Diabetes Organisation - The <i>Health Check</i> logo of the Canadian Heart and Stroke Foundation - The <i>Health Check</i> logo of the American Heart Association - The <i>Pick the Tick</i> logo of the Heart Foundation of Australia and New Zealand 	<ul style="list-style-type: none"> - The traffic light system of the British <i>Food Standards Agency</i>, in which the background colour of each nutritional factor in combination with the words 'high', 'medium' and 'low' indicate whether the value is favourable (green), neutral (orange) or unfavourable (red).
<i>Systems developed by and for specific companies</i>	
<ul style="list-style-type: none"> - The <i>Balanced Choices</i> logo for Selecta - The <i>Sensible Solution</i> logo for Kraft - The <i>Smart Choices made easy</i> logo of the Pepsi company in the USA - The <i>Healthy Eating</i> logo of the British supermarket chain Tesco - The <i>Healthy Balance</i> logo of the British supermarket chain Sainsbury's 	<ul style="list-style-type: none"> - The <i>Be Good To Yourself</i> logo / <i>Wheel of Health</i> label of the British supermarket chain Sainsbury's, in which the background colour of every nutritional factor indicates whether the value is favourable (green), neutral (orange) or unfavourable (red).

1.3 Request for advice and committee

On 5 June 2007 the Health Council received a request for advice about the logos and the GDA system from the Minister of Health, Welfare and Sport (annex A). As the FNLI has recommended since the summer of 2007 that the GDA system be applied instead of the Energy logo, the decision was made to include this change in answering the call for advice.

The minister has asked for a scientific evaluation of:

- the criteria used, also in relation to product groups
- the interpretation of the logos and the GDA system by the consumer
- the efficacy of logos and the GDA system in promoting a healthy choice by consumers
- the extent to which the logos and the GDA system stimulate the food and drink industry to develop healthier products.

The Minister writes in his request that this advisory report may contribute to the current European discussion about the so-called nutrient profiles. According to the EU Regulation on Nutrition and Health Claims Made on Foods (regulation number 1924/2006), in force since 1 July 2007, claims are only permissible on products that conform to a nutrient profile, which has yet to be formulated. This means that they must meet certain threshold values for one or more nutritional factors. These nutrient profiles must ensure that in future it will no longer be possible to make claims on products with an ‘unhealthy’ composition. The European Union also regards the logos as claims. The nutrient profiles are currently under development and it is not yet known precisely what form they will take.

To address this request for advice a committee was inaugurated on 11 July 2007. The composition of the committee is listed in annex B.

1.4 Design of the advisory report

The following chapter is dedicated to the criteria for awarding the logos, also in relation to product groups. Chapter 3 discusses the nutritional factors that are incorporated in the GDA system and the reference values used to calculate the percentages in the GDA system. Chapter 4 discusses the questions surrounding the consumers: do they understand the logos and the GDA system and to what extent do these systems influence their choice behaviour? Chapter 5 discusses the effects on product improvement and product innovation. In chapter 6 the

committee answers the questions posed by the minister and formulates its recommendations. Annex C contains a glossary.

The criteria for awarding logos to products

Products are awarded the Choices stamp or the Healthy Choice Clover based on the levels of certain nutritional factors. Which nutritional factors these are and what limits are maintained, depends on the product group to which the food belongs. For the evaluation of these logo criteria, the committee wants to determine the extent to which they concur with the Guidelines for a healthy diet 2006.^{1,2} There is broad consensus that Food-Based Dietary Guidelines, as well as the resulting general public education about healthy eating must be created and settled at a national level.⁴ In the Netherlands the Guidelines for a healthy diet 2006 are translated into guidelines at the level of foodstuffs by the Netherlands Nutrition Centre. The way in which this is done is described in a report, which is available via internet.⁵ These Food-Based Dietary Guidelines are the only objective comparative material available for evaluation of the criteria of the Dutch logos. Furthermore, this report forms the base of the general public education about healthy eating in the Netherlands and the committee is of the opinion that the message carried by the logos should be consistent with this food education.

In this chapter the committee will first describe the most important aspects of the Dutch Food-Based Dietary Guidelines. The committee will then compare the criteria for awarding both logos to the criteria maintained in the Food-Based Dietary Guidelines. The criteria have been listed in annex D.

2.1 The Dutch Food-Based Dietary Guidelines

The Food-Based Dietary Guidelines⁵ form the basis for the general public education about healthy eating. They contain recommendations on two levels: the level of the total dietary pattern and the level of foodstuffs. At both levels an important starting point is the difference between basic product groups and non-basic product groups:

- *Basic product groups*
The basic product groups are important in the Dutch eating pattern for the provision of essential nutrients (vitamins, minerals, essential fatty acids and essential amino acids), dietary fibre and water. They include vegetables, fruit, bread, potatoes, pasta, rice, legumes, fish, meat and meat products, poultry, eggs, meat substitutes, dairy, spreadable fats, cooking fats and drinks. Ready-to-eat meal products are substitutes for basic products.
- *Non-basic product groups*
The non-basic product groups contribute little or nothing to the provision of nutrients. Examples of non-basic products are snacks, biscuits, sweets, sauces, and soups intended as a starter or snack.

For some products it is not immediately clear to which product group they belong. The product group is relevant because it determines: firstly, the recommendation concerning the daily amount to be used, secondly the nutritional factors based upon which the nutritional quality of the product is evaluated and thirdly, the limits set for these nutritional factors. Annex E describes the procedure for determining whether a product belongs in a certain basic product group.

The Food-Based Dietary Guidelines apply to people with an average Dutch eating pattern. People with different eating patterns may need to make other choices when translating from a healthy dietary pattern to a healthy product choice. This is the case for vegans and for immigrants eating according to the dietary pattern in their country of origin. This also applies to groups with differing requirements, such as people who suffer from food allergies, or those engaged in intensive sports activities.

2.1.1 *Guidelines regarding the dietary pattern*

The 'basic diets' give recommended amounts per basic product group

The Food-Based Dietary Guidelines specify basic diets for various age and sex groups. These basic diets give amounts per basic product group, which can provide the relevant groups with sufficient vitamins, minerals, dietary fibre, linoleic acid, alpha-linolenic acid and fish-derived fatty acids. The starting points for creating these basic diets are the target values from the Guidelines for a healthy diet 2006 for vegetables, fruit and fish, the target to have bread and potatoes make up a greater portion of the diet, the use of a quantity of low fat margarine / cooking fat that matches the recommendations for vitamin A and the use of a quantity of dairy products that matches the recommendations for intake of calcium. The quantity of cheese and the quantity of meat/fish/eggs in the basic diets have been set to the same level as current average consumption levels.

The 'room for free choice' is defined as the calories available for non-basic products

The basic diets provide a large amount of the average energy requirements. However, there is still a certain amount of 'room for free choice' in each age and sex group. This refers to the maximum amount of calories available for the consumption of non-basic products, such as snacks, biscuits, sweets, sauces and soups that are intended as a starter or snack.

This information cannot be provided via the logos

The committee notes that the guidelines regarding the dietary pattern (the daily amounts per basic product group and the 'room for free choice') cannot be displayed via the logos: these quantities vary for age and sex and therefore cannot be represented in a picture format. In this way the logos do differ from the Food-Based Dietary Guidelines.

2.1.2 *Guidelines regarding product choice*

The aspect of the Food-Based Dietary Guidelines that does correspond to the logos is the evaluation of foodstuffs within the product groups. In the case of the logos, this evaluation leads to the decision to either or not award the logo and this

leads to a division into two categories. The Food-Based Dietary Guidelines divide all foodstuffs (both basic and non-basic foodstuffs) into three categories:

A category	‘preferable’	Within the product group, the choice for these products has a favourable effect on the realisation of a healthy diet.
B category	‘in moderation’	Within the product group, the choice for these products has a neutral effect on the realisation of a healthy diet.
C category	‘occasionally’	Within the product group, the choice for these products has an unfavourable effect on the realisation of a healthy diet.

Product groups and nutritional factors

The division is based on the levels of saturated fat, trans fat, sodium, added sugar and dietary fibre (and/or vegetables and fruit). The composition of foodstuffs in general differs from the average composition of the total dietary pattern and is largely determined by the nature of the product or the ingredients. Example: products of animal origin, such as cheese, meat or fish do not contain dietary fibre. The possibilities of modifying the composition of foodstuffs are also limited by the role of nutritional factors in:

- the structure of the product
example: saturated fat makes biscuits crispy
- food safety or the prevention of decay
example: salt in meat products limits the growth of the bacteria that cause botulism
- the taste acceptance by consumers
example: Dutch people do not enjoy bread that has too little salt in it.

Therefore, division into product groups is not necessary. The three-way division into basic products, non-basic products and ready-to-eat meal products determines the nutritional factors on which a product is evaluated (see table 2), but the limits may vary per product group.

The formation of a separate product group usually means that the evaluation of at least one nutritional factor has been made more or less strict. Therefore, the way in which products are grouped is important for the quality of the evaluation system. The product group division should ideally concur with the position of the

Table 2 The evaluation system of the Food-Based Dietary Guidelines.⁵

Nutritional factor	Is this nutritional factor evaluated or not?		
	Basic products ^a	Non-basic products	Ready-to-eat meal products
Saturated fat	Yes	Yes	Yes
Trans fat	Yes	Yes	Yes
Sodium (salt)	Yes	Yes	Yes
Calories	No	Yes	Yes
Added sugar	Yes	No	Yes
Dietary fibre	If from plant-based origin	No	Yes
Fruit/vegetables	No	No	Yes

^a The table is not applicable to fruit and vegetables without additives (fresh, deep frozen and conserved) and fish without additives (fresh or deep frozen, including salted and pickled herring): these products are always listed in the A category, because consumption from the entire product group should be stimulated according to the Dutch Guidelines for a healthy diet 2006.

products in the dietary pattern. For nutritional and educational reasons, the following aspects play a role in this:

- *Exchangeability in use and nutritional value*
Products that are exchangeable in use and provide a similar contribution to the intake of important nutrients usually belong to the same product group. It is important that consumers can compare these products. Therefore they should be evaluated with the same criteria.
Meat, chicken and eggs therefore belong to the same product group. Another example are the soups used as a main course: the meal soups. The Food-Based Dietary Guidelines list these in the product group for ready-to-eat meals and not in the product group for soups.
- *The value of specific foodstuffs for a healthy diet*
If there are nutritional reasons to promote the consumption of certain products, this may be a ground to create a separate product group for these products with less stringent criteria.
An example is fish. Based on its protein content and use, fish should be listed in the product group along with meat, chicken and eggs. However, according to the Dutch Guidelines for a healthy diet 2006, the consumption of fish should be promoted specifically.¹ For this reason, fish is listed in a separate product group in the Food-Based Dietary Guidelines.
- *Cultural aspects (eating habits)*
Products with a less favourable composition may automatically be labelled as 'less healthy' when using evaluation criteria aimed at broader product

groups. If these products traditionally play an important role in the dietary pattern, it might be better to place them in a separate product group with less stringent criteria in the interests of public health, for this is the only way in which to demonstrate the healthier and less healthy options.

An example is cheese. Based on its exchangeability in use and the nutritional value, cheese belongs to the same product group as meat products. In that case, all types of cheese would be placed in the C category due to high levels of saturated fat. This would lead to the educational message that cheese – irrespective of the type of cheese – should only be eaten occasionally. Based on the role that cheese traditionally plays in the Dutch dietary pattern, it is thought that an educational message focusing on the choice of cheese with a relatively favourable composition would have more effect on the dietary pattern than an educational message aimed at reducing the consumption of cheese. Therefore, a separate product group has been created for cheese.

The setting of limits

The Netherlands Nutrition Centre has described in detail the method and the base on which it determines its limits for product evaluation.⁵ A short description of this may be found in annex F. In the Food-Based Dietary Guidelines the starting point for setting the limits is the current dietary pattern in the Netherlands: as far as possible, the B/C limits match the current average intake of the relevant nutrients from the relevant product group. The A/B limits match the desired changes for that nutrient (for saturated fat this is a reduction of 30 percent, for dietary fibre this is an increase of 30 percent). However, for trans fat and sodium, there is insufficient data to implement this approach and the limits are based on the levels in the current range of products.

Sometimes, a greater significance is awarded to one nutritional factor over another in a product group. In these cases the following order of nutritional factors was used (as suggested by the Health Council's Guidelines for a healthy diet 2006):

- 1 saturated fat and trans fat
- 2 dietary fibre including fruit and vegetables
- 3 fish-derived fatty acids
- 4 sodium (salt)
- 5 added sugar.

For example, wholemeal bread is listed in the A category (the ‘preferable’ category) due to the importance of this product for fibre consumption and its contribution to the consumption of certain micronutrients, although this bread – just as all other types of bread – contains relatively high levels of sodium.

Certain nutritional factors are evaluated on the basis of relatively lenient limits, either in general or in specific product groups. These choices are associated with educational considerations and are related to the dietary habits in the Netherlands and the composition of the current range of products. This applies to:

- *The limits for sodium*
The sodium criteria are in agreement with the average levels in the current range of products, which creates less incentive for product development.
- *The limit for saturated fat in cheese*
The limit for the level of saturated fat in cheese is significantly more lenient when compared to other product groups, based on the amount of saturated fat that Dutch people consume on average via the current use of these products (18 grams / 100 grams; this is the B/C limit) and the desired improvement of 30 percent (12 grams per 100 grams; this is the A/B limit).
- *The limit for trans fat in animal-derived products*
These limits are applicable to a part of the trans fats in these products (namely the trans fats of plant-derived origin that may be added to certain animal-derived products during the production process), whilst the limits are derived from the upper limit for all trans fats.

For nutritional reasons, the A/B limits for certain product groups are relatively stringent. This applies to:

- *the A/B limits for dietary fibre in the product group bread and the product group potatoes, legumes, rice and pasta*
Dietary fibre is only found in plant-derived products. In order to achieve the fibre guidelines, consumers must choose the fibre-rich alternatives of products that form an important source of dietary fibre. The A/B limit for dietary fibre is 2.4 grams per 100 kCal in the product group for bread and 4 grams per 100 kCal in the product group for potatoes, legumes, rice and pasta. The B/C limit for both product groups is 1.3 grams per 100 kCal, as is the A/B
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limit for ready-to-eat meals; this is the desired average level in the total daily diet.

- *the A/B limit for saturated fat in milk and milk products*

The level of saturated fat forms the primary criterion in the evaluation of dairy products. The recommended daily consumption of milk (products) is high in comparison to other sources of saturated fat in the diet: depending on the age group, it varies between 300 and 650 ml per day. Therefore, the relatively stringent A/B limit of 0.5 grams of saturated fat per 100 grams is used in the Food-Based Dietary Guidelines. The B/C limit is 1.4 grams per 100 grams. In this way, only skimmed dairy products are eligible for the ‘preferable’ category and semi-skimmed dairy products fall into the ‘in moderation’ category.

In all cases specified above (both the relatively lenient and the relatively stringent A/B limits) the committee deems it undesirable for the limits when awarding logos to be of a less stringent level than the A/B limit in the Food-Based Dietary Guidelines.

2.2 The Choices stamp

The Choices stamp organisation has described in detail the way in which the criteria for awarding the logo with the same name were created.⁶⁷ A short description of this may be found in annex F. The committee will now discuss the most important differences in comparison to the Food-Based Dietary Guidelines.

2.2.1 Product groups and nutritional factors

The product groups for the Choices stamp differ on various points to those of the Food-Based Dietary Guidelines (see annex D). For example, fruit juices form a separate product group and sauces are divided over three product groups, with (partly) more lenient criteria for awarding the logo. The Choices stamp organisation evaluates most product groups according to the same nutritional factors as the Food-Based Dietary Guidelines. However, there are a few exceptions. In the Food-Based Dietary Guidelines the evaluation of the dietary fibre content of ready-to-eat meals comprises both the amount of vegetables/fruit per portion and the total dietary fibre content, whereas when awarding the Choices stamp only one of these two aspects is evaluated. Furthermore, there is no evaluation of the amount of calories in ‘other products’. On the other hand, in some product

groups for this logo, more nutritional factors are evaluated than for the Food-Based Dietary Guidelines. This applies to (among others) the amount of added sugar.

Basic products

Similarly to the Netherlands Nutrition Centre, the Choices stamp organisation has recorded a procedure for determining whether a product belongs in a certain basic product group. This procedure is described and compared to that of the Netherlands Nutrition Centre in annex E.

2.2.2 *Limits*

Fresh vegetables, fruit and fish without additives, and meal sauces that carry a Choices stamp, are always designated as ‘preferable’ products in the Food-Based Dietary Guidelines (annex D). In all other product groups there is no guarantee that the logo products belong to the ‘preferable’ category in the Food-Based Dietary Guidelines.

- In some product groups, products with a Choices stamp are, according to the Food-Based Dietary Guidelines, assigned to the ‘preferable’ or ‘in moderation’ category, but never to the ‘occasional’ category.

This is the case if the limits for one or more nutritional factors are less stringent than the A/B limits of the Food-Based Dietary Guidelines and similar as or more stringent than the B/C limits. It applies to processed potatoes, rice and pasta, to cereals and cereal products, to fats and oils, to soups intended as a starter or snack, and to water-based sauces with a portion size less than 35 grams and to snacks.

- In other product groups, some products with a Choices stamp might, according to the Food-Based Dietary Guidelines, be assigned to the ‘occasional’ category.

This may be the result of one of the following causes: one or more nutritional factors are not evaluated whilst this does happen in the Food-Based Dietary Guidelines or the limit for one or more nutritional factors is less stringent than the B/C limits of the Food-Based Dietary Guidelines. This situation applies to processed vegetables and legumes, processed fruit, vegetable juices and fruit

juices, to meat, poultry, eggs (unprocessed), to processed meat, meat products and meat substitutes, to milk and dairy products, to cheese and cheese products, to drinks, to sauces with an emulsifier or a fat content higher than 10 grams per 100 grams of which the portion size is less than 35 grams, to 'other products', to ready-to-eat meals and to ready-to-eat sandwiches/bread rolls. Both causes mentioned before do not apply to two other product groups, but in these two groups one threshold value has another unit in the evaluation for the Choices stamp compared to the Food-Based Dietary Guidelines: the product group of bread and bread substitutes and the product group of processed fish and fish products. In these two product groups it is also possible that certain products from the 'occasional' category of the Food-Based Dietary Guidelines carry the Choices stamp.

Most of the differences between the Choices stamp criteria and the criteria in the Food-Based Dietary Guidelines are probably the result of differences in the starting points of determining the limits. Wherever possible, the limits in the Food-Based Dietary Guidelines are based on the average consumption of the nutritional factor via products from the relevant product group (this is the level of the B/C limit) and on the improvement thereof by 30 percent (in order to achieve the A/B limit). The Choices stamp organisation does not base the criteria on food consumption data, but on the composition of the existing range of products: the principle is that approximately 20 percent of the existing basic products and approximately 10 percent of the existing non-basic products should be able to obtain the Choices stamp.

According to the committee the most obvious points of concern regarding the limits of the Choices stamp are:

- *Dietary fibre*

The fibre criterion for fruit juices is significantly less stringent than the B/C limits in the Food-Based Dietary Guidelines (0.75 instead of 1.3 grams per 100 kCal).

For (processed) potatoes, rice, pasta, noodles and bread, the criteria for dietary fibre are similar to the B/C limits of the Food-Based Dietary Guidelines, which is considerably less stringent than the A/B limits. For ready-to-eat meals and sandwiches the fibre criteria concur with the B/C limits from the Food-Based Dietary Guidelines: in these products groups the A/B criteria for the fibre content comprise criteria for both the total fibre content and for the amount of vegetable per portion, whereas the B/C criteria involve the evaluation of only one of these two factors.

- *Calories*

The calorie content for drinks is significantly less stringent than the B/C limits in the Food-Based Dietary Guidelines (32 instead of 20 kCal per 100 millilitres). The A/B limit in the Food-Based Dietary Guidelines is even stricter and is set at 4 kCal per 100 millilitres. The calorie content is not calculated when awarding the Choices stamp to ‘other products’, whilst it is evaluated in the Food-Based Dietary Guidelines.

The limit for the calorie content of soups, sauces based on an emulsion and snacks is approximately the same as the B/C limit in the Food-Based Dietary Guidelines and significantly less stringent than the A/B limits.
 - *Saturated fat*

The limit for the saturated fat content of milk and dairy products is set at a similar level to the B/C limit in the Food-Based Dietary Guidelines (1.4 grams per 100 grams of product), whilst the A/B limit is significantly more stringent (0.5 grams per 100 grams). The limit for cheese and cheese products is about halfway between the A/B and the B/C limits of the Food-Based Dietary Guidelines.
 - *Added sugar*

The limit for milk products is set at the same level as the B/C limit in the Food-Based Dietary Guidelines (5 grams per 100 grams of product), whilst products from the A category may not contain any added sugar according to the Food-Based Dietary Guidelines.
 - *Sodium*

The sodium criteria for the Choices stamp are largely similar to the A/B limits in the Food-Based Dietary Guidelines. Only in the case of sauces with a portion size of less than 35 grams and for ready-to-eat meals and ready-to-eat sandwiches is the limit for the Choices stamp set at the B/C limit of the Food-Based Dietary Guidelines. However, the Choices stamp organisation concludes from their own analysis that sodium is the nutritional factor for which the target (to realize a diet with no more than 2.4 grams of sodium per day)
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with the current criteria is realised the least.* The committee agrees with this conclusion and draws attention to the fact that it had already indicated in section 2.1.2 that the sodium criteria of the Food-Based Dietary Guidelines create little incentive for product development.

2.2.3 *How informative is the absence of the Choices stamp?*

If a product does not carry the Choices stamp, this can be due to one of two reasons: the product does not meet the criteria for the relevant product group, or the product has not been evaluated. Therefore, the absence of a Choices stamp does not provide any assurance about the nutritional value of the product.

2.3 **The Healthy Choice Clover**

2.3.1 *Product groups and nutritional factors*

In virtually all product groups, the evaluation procedure for the Healthy Choice Clover is based on fewer nutritional factors than that of the Food-Based Dietary Guidelines. An important difference is that the level of trans fat never plays a role in awarding the Healthy Choice Clover. Albert Heijn states that the amount of trans fats in all Own-Brand products has been reduced to less than 1 gram per 100 gram product, except products that are mainly from animal origin.⁸ The committee notes that this limit is very high in relation to the dietary guidelines for trans fat: based on the guidelines, an adult woman should use no more than 2.2 grams of trans fat per day and this includes trans fat from both plant-based and animal products.** The maximum level of trans fat in Own-Brand products of Albert Heijn is many times higher than the insignificance level of 0.14 grams per 100 grams maintained for plant-derived trans fat in the Food-Based Dietary Guidelines (and the Choices stamp).

* The Choices stamp organisation has compared daily menus based on common products (common daily menus) and daily menus consisting of products with a Choices stamp (logo menus), in order to determine the extent to which logo products can effect a healthier diet. The logo menus were favourable as far as saturated fat, trans fat and added sugar were concerned. The committee does note that the logo menus contain significantly fewer calories than the common daily menus and may therefore be too flattering. The target for sodium was not achieved with the logo menus, although the level of sodium was lower than in the common daily menus. Based on this analysis, the Choices stamp organisation states that sodium is the most important cause for concern.

** At a daily intake of 2000 kilocalories (the average calorie consumption for an adult woman; this value is also used as a reference value for other nutritional factors), the upper limit of 1 energy percent trans fat^{1,9} leads to a maximum daily consumption of $0.01 \times 2000 = 20$ kCal from trans fat. Taking into consideration the caloric content of fat (9 grams per kCal), this equates to a maximum daily consumption of $20 / 9 = 2.2$ grams of trans fat.

Soups, sauces and dressings are not evaluated on calorie content when awarded the Healthy Choice Clover, whilst this is the case for the Food-Based Dietary Guidelines. In addition, most (but not all) meal products are evaluated on the amount of vegetables per portion, but not on the fibre content. There is also no evaluation of added sugar in lunch products.

A different approach is followed when awarding the Healthy Choice Clover to sandwiches and toasted sandwiches. It is not the levels in the total product that are evaluated, but the levels in the ingredients, and any ingredients that together form less than 10 percent of the product weight may be omitted from the evaluation. The procedure is inadequate for determining the nutritional value of the total product, firstly, because the ingredients that are omitted from the evaluation may have an unfavourable composition and secondly, because ready-to-eat meal products such as sandwiches and toasted sandwiches should, according to the Food-Based Dietary Guidelines, be evaluated on more nutritional factors than ingredients (basic products and non-basic products).

In the case of the Healthy Choice Clover, the differences in product group divisions often lead to less stringent limits for sodium than the Food-Based Dietary Guidelines. In addition, the criterion for the amount of vegetables per portion in the extra product group 'pizza and quiche' has been scrapped altogether.

Basic products

As stated previously, both the Netherlands Nutrition Centre and the Choices stamp organisation have recorded procedures for determining whether a product belongs in a certain basic product group. Such a specification is absent for the Healthy Choice Clover.

2.3.2 *Limits*

The criteria for the Healthy Choice Clover only guarantee that the logo products are preferable products according to the Food-Based Dietary Guidelines for fresh vegetables, fruit and fish without additives (see annex D). In all other product groups, products carrying a Healthy Choice Clover can fall into the A, B or C category of the Food-Based Dietary Guidelines, because one or more of the nutritional factors has been evaluated for the Food-Based Dietary Guidelines, but not for the Healthy Choice Clover. The logo does not guarantee that the product would be indicated as 'preferable' or 'in moderation' in the Food-Based Dietary

Guidelines. Furthermore, certain limits for the Healthy Choice Clover are less stringent than for the Food-Based Dietary Guidelines.

For most product groups, the Healthy Choice Clover limits for saturated fat are similar to the A/B limits in the Food-Based Dietary Guidelines. However, for ready-to-eat meals and for pizzas and quiches, the limit is similar to the B/C limit of the Food-Based Dietary Guidelines and for sandwiches and toasted sandwiches the alternative evaluation procedure does not allow a comparison. Drinks that are awarded the Healthy Choice Clover are not evaluated for saturated fat, whilst this is the case in the Food-Based Dietary Guidelines. However, the committee does not consider this very problematic, as drinks generally do not contain saturated fat.

According to the committee, the most obvious causes for concern are the following:

- *Trans fat*

For all Own Brand products of Albert Heijn the maximum level of transfat is 1 gram per 100 gram product. The level of trans fat is not further evaluated to distinguish between products with and without the logo. However, the committee described in paragraph 2.3.1 that the limit of 1 gram per 100 gram product is many times higher than the limits in the Food-Based Dietary Guidelines.

- *Sodium*

The sodium criteria for vegetable products, fruit products, fish products, unprocessed meat, poultry and eggs are less stringent than the B/C limits for sodium in the Food-Based Dietary Guidelines (see annex D). The sodium criterion for salad dressings is similar to the B/C limit of the Food-Based Dietary Guidelines. The sodium criterion for all ready-to-eat meal products and for fats cannot be evaluated properly because different units are used and therefore is not optimal.

- *Dietary fibre*

The criterion for the fibre content of potatoes, legumes, pasta, rice and similar products cannot be evaluated due to the use of units that differ from those in the Food-Based Dietary Guidelines, and is therefore not optimal. Ready-to-eat meal products do not have to meet a fibre criterion in order to be awarded the Healthy Choice Clover. There is a criterion for the amount of vegetables per portion, but if the packaging lists a recommendation to com-

bine the product with vegetables, then the limit is less stringent than the B/C limit for the amount of vegetables in the Food-Based Dietary Guidelines.

- *Calories*

The calorie content of soups and sauces is not evaluated in the process of awarding the Healthy Choice Clover.

- *Ready-to-eat meal products*

With regard to ready-to-eat meal products, the committee is worried about the levels of saturated fat, trans fat, sodium and dietary fibre.

For ready-to-eat meals, pizzas and quiches, the limit for saturated fat is similar to the B/C limit of the Food-Based Dietary Guidelines, the sodium criteria cannot be compared to the Food-Based Dietary Guidelines due to the use of different units, the amount of vegetables and the level of trans fat are not evaluated sufficiently and the level of total dietary fibre is not evaluated at all.

2.3.3 *How informative is the absence of the Healthy Choice Clover?*

All Own-brand products from Albert Heijn are evaluated for the Healthy Choice Clover, except for the products from product groups which are not eligible for this logo, such as snacks. Therefore, in general both the presence and the absence of this logo provides information about the nutritional value of these products.

However, the committee notes that Albert Heijn stores sell other products in addition to the Own-Brand products that are not evaluated for the Healthy Choice Clover. In order to understand the meaning of the absence of this logo, the consumer must be aware if a product either or not belongs to one of the Own-Brands of Albert Heijn. The committee expects that not many consumers will be aware of this, but there is no research available on this matter.

2.4 **Conclusions**

The committee thinks that the criteria for the logos should be consistent with the general public education on healthy eating in the Netherlands. For this reason, comparison was made with the Food-Based Dietary Guidelines. The committee's conclusions are as follows:

- The most important causes for concern with regards to awarding the Choices stamp are related to fibre criteria in general and the criteria for the calorie
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content of products that are of little value in providing nutrients (especially drinks, but also sweets, snacks, biscuits and certain sauces). In addition, the evaluation of dairy products does not match the 'preferable' category of the Food-Based Dietary Guidelines, but rather the 'in moderation' category. The differences are probably mainly the result of the fact that the composition of the Dutch range of products, not the food consumption in the Netherlands, are the central point in determining the limits for this logo.

- The criteria for awarding the Healthy Choice Clover are inadequate for ready-to-eat meal products. The limit for trans fat is far too lenient for all products. For soups and sauces the calorie content is also lacking in the evaluation. The limits for sodium are relatively less stringent in various product groups. The fibre criteria are not optimal in certain basic product groups that are important for the provision of dietary fibre.

De Guideline Daily Allowance and the GDA-system

In this chapter the committee will discuss the nutritional factors (that should be) found in the GDA system and the reference values that are used for calculating the GDA percentages. In contrast to the logos, the total dietary pattern forms the reference point for the GDA system. Taking this into account, the committee has evaluated the GDA system and the reference values based on a comparison to the Dutch Guidelines for a healthy diet 2006.

3.1 Guidelines for a healthy diet 2006

The Guidelines for a healthy diet 2006^{1,2}, which form the scientific basis for the Food-Based Dietary Guidelines discussed in the previous chapter, describe the desired dietary pattern of the Dutch population. The recommendations include the energy balance, the fatty acid composition of the food, the consumption of nutrients and of some specific foodstuffs (vegetables, fruit, fish) and limiting the intake of sodium. The following guidelines are relevant for the GDA system:

- Use less than 10 energy percent saturated fat
- Use less than 1 energy percent trans fat
- Use less than 6 grams salt per day
- Use 30 to 40 grams of dietary fibre from vegetables, fruit and whole grain products per day.

The Guidelines for a healthy diet 2006 do not set a target value for the amount of calories, because calorie requirements can vary greatly (for example, depending on differences in body weight and physical activity). The amount of calories should comply to individual requirements.

There are also no targets for the total fat content and the total sugar content of the food. Based on scientific knowledge about the influence of the dietary pattern on body weight, the emphasis of these guidelines is on the energy balance. People who are overweight or experiencing undesired weight gain are given the recommendation to limit the consumption of so-called 'empty calories': saturated fat and added sugar, especially if they are found in products that contain few essential nutrients.

3.2 The GDA system

3.2.1 Nutritional factors

When applying the GDA system, a company has three main options: the presentation of the calorie content only or the presentation of a more expansive version that always lists the amounts of calories, total fat, saturated fat, total sugar and sodium, but in which dietary fibre is optional.

The total sugar content was chosen instead of the amount of added sugar for the GDA system. Three arguments are given: there is no singular definition of added sugar; added sugar is hard to measure; and the European legislation demands labelling of the total amount of sugar.

The nutritional information is presented per portion in the GDA system. This is done in two ways: as an absolute amount and as a percentage of the reference value. Points of departure for determining the reference value are that this value:

- concurs with the current legal requirements as listed in Directive 90/496/EEC of the labelling of the nutritional value of foodstuffs
- is applicable to the average adult of 18 years and over with a normal, healthy weight
- is rounded off to simplify use by consumers and allow consumers to remember the numbers more easily and to prevent that the numbers suggest an accuracy that does not exist.

Opinions of the committee

The committee is of the opinion that nutritional information presented on the front of the product packaging, as is the case for the GDA system, should be rel-

evant for the nutritional evaluation of the products. Based on this principle, the committee agrees that energy, saturated fat, sodium and dietary fibre should be listed in the GDA system. According to the Guidelines for a healthy diet 2006, the consumption levels of these nutritional factors are important for public health.

The total fat content and the total sugar content are relevant in the context of the obesity problem, because fats and sugars contribute to the total amount of calories in food. The Guidelines for a healthy diet 2006¹ state that people who are overweight and people who are experiencing undesired weight gain, should particularly limit the intake of so-called 'empty calories' and sugar-rich drinks.* 'Empty calories' refer to added sugar and saturated fat, particularly when found in products with few useful nutrients. Anyone wishing to limit calorie intake through fats should focus on the fats that negatively affect health (saturated fat and trans fat). A qualitatively good composition of dietary fat is of great importance in the prevention of heart disease. Anyone wishing to limit calorie intake through sugars should focus on free sugars, because especially the free sugars can lead to caloric overconsumption. Free sugars are all monosaccharides and disaccharides that are added to foodstuffs by the manufacturer, cook or consumer, plus the naturally occurring sugars in honey and syrups and fruit juices.⁹ Taking all this into consideration and because the calorie content per portion is listed separately in the GDA system, the committee suggests that total fat and total sugar should not be included in the GDA system and recommends to present the levels of trans fat and free sugars instead.

3.2.2 *Reference values for the calculation of the GDA percentages*

Table 3 provides a summary of the reference values used to calculate the percentages in the GDA system.

The daily energy requirement is necessary in order to incorporate energy in the GDA system and to convert energy percentages of fat, saturated fat and carbohydrates into grams. However, the energy requirements vary greatly between individuals and depends among other factors on body weight and the degree of physical activity. Age and sex also play a role. The CIAA has based its calculations on an average calorie requirement of 2000 kCal per day; the average

* In the Food-Based Dietary Guidelines, the choice has been made to extend the recommendation to limit the consumption of 'empty calories' and sugar-rich drinks to the food education to the entire population and not specifically targeted at people who are overweight and people experiencing an undesired increase in weight. The committee deems this to be a justified choice, in light of the increase in the prevalence of obesity in the Dutch population.

Table 3 The GDA values are based on the EURODIET guidelines for these nutritional factors.

Nutritional factor	EURODIET guideline ¹⁰	Guidelines for a healthy diet 2006 ^{1,2}	GDA value	Type of guideline
Energy	-	-	2000 kCal	Average
Total fat	< 30 energy percent	-	70 grams	Upper limit
Saturated fats	< 10 energy percent	< 10 energy percent	20 grams	Upper limit
Total sugars	-	-	90 grams	Sum of upper and lower limits
Salt	< 6 grams per day	< 6 grams per day	6 grams (2.4 grams of sodium)	Upper limit
Dietary fibre	≥ 25 grams per day	1.4 grams per 100 kCal (this equates to 30 to 40 grams per day for adults)	25 grams	Guideline/recommendation

requirement for women. The average man needs more calories and an average child needs fewer calories. Therefore, the CIAA has advised that the label should state that active men have a greater energy requirement and young children have a lower energy requirement.

The CIAA has based the reference values for total fat, saturated fat, fibre and salt on dietary guidelines set out in the EURODIET project in 2001 (Nutrition and Diet for Healthy Lifestyles in Europe).¹⁰ The reference value for energy was used when calculating energy percentages.

The CIAA has based the reference value for total sugar on an estimate of sugar consumption from various sources.

Opinions of the committee

The committee supports the reference values chosen by the CIAA for the calculation of the GDA percentages for energy, saturated fat and sodium. The values for saturated fat and sodium are similar to the upper limits for these nutritional factors in the Guidelines for a healthy diet 2006. Although these guidelines do not offer target values for the amount of calories per day, the Food-Based Dietary Guidelines for the Netherlands maintain the same value as the CIAA, which is 2000 kilocalories per day.

For dietary fibre, the committee urges an increase in the reference value to 28 grams per day, based on the Dutch fibre guideline of 1.4 grams per 100 kilocalories and the energy requirements of 2000 kilocalories used in the GDA system.

In paragraph 3.2.1 the committee recommended to include free sugars in the GDA system. The WHO upper limit for free sugars of 10 energy percent can be used as a reference value for calculating the GDA percentage. For an energy

requirement of 2000 kilocalories per day, no more than 200 kilocalories should be provided by free sugars. At an energy value of 4 kilocalories per grams of sugar, this equates to a maximum of 50 grams of free sugars per day.

The committee is of the opinion that trans fat should also be included in the GDA system. The upper limit of one energy percent may be used as a reference value. For a diet consisting of 2000 kilocalories, this equates to 20 kilocalories from trans fat, or 2.2 grams per day.

3.3 Conclusions

- The committee is of the opinion that nutritional information presented front-of-pack, as is the case for the GDA system, should be sufficiently relevant for the nutritional evaluation of the products. Four of the six nutritional factors in the GDA system meet this requirement: calories, saturated fat, sodium and dietary fibre. According to the committee, the other nutritional factors (the total sugar content and the total fat content) should be replaced by free sugars and trans fat, because these are of greater value in the nutritional evaluation of products.
- The committee endorses the reference values used to calculate the GDA percentages for calories, saturated fat and sodium. The committee would like the reference value for dietary fibre to be increased to the level of the Dutch guideline. The committee has made a proposal for the reference values for free sugars and trans fat.

Promoting the choice for healthier products

The discussion up to this point has been about the nutritional criteria to which the committee thinks the logos and nutritional information should adhere. However, it is as important that consumers actually chose the healthier products. In this chapter, the committee will focus its attention on factors that influence and can improve this product choice.

4.1 Empirical data and a thought framework

There has been little scientific research

Do people eat a healthier diet because there are logos on products or because nutritional information is supplied? The committee has established that little scientific research has been performed regarding this question. Furthermore, the scarce research data that are available are, apart from a single exception, not directly related to the Dutch logos and the GDA system in this advisory report.^{9,21}

During a hearing, the committee was able to view various data from Dutch companies and other organisations. These were mainly the results of questionnaires among consumer panels. Although the results do provide some insight, they carry little scientific weight. Therefore, the committee only used them as additional information and only for the main points of consideration. Annex G describes these studies.

A theoretical model offers reference points

A conceptual framework is useful to interpret the available data properly and to identify gaps in our knowledge. The committee is of the opinion that the theoretical model by Grunert and Wills⁹ could be used for this. The right-hand section of figure 1 gives a schematic representation of the ways in which logos and nutritional information can influence product choice. The left-hand column lists the characteristics of the logo and of consumers that, directly or indirectly, affect the use of information in product choice. The committee will discuss the separate aspects in detail in the following sections.

In figure 1 the committee has added two elements to the model by Grunert and Wills. In the right-hand column this is 'credibility'. The committee deems it plausible that a logo or nutritional information will play a greater role in product choice as it becomes more credible. 'Communication' has been added to the left-

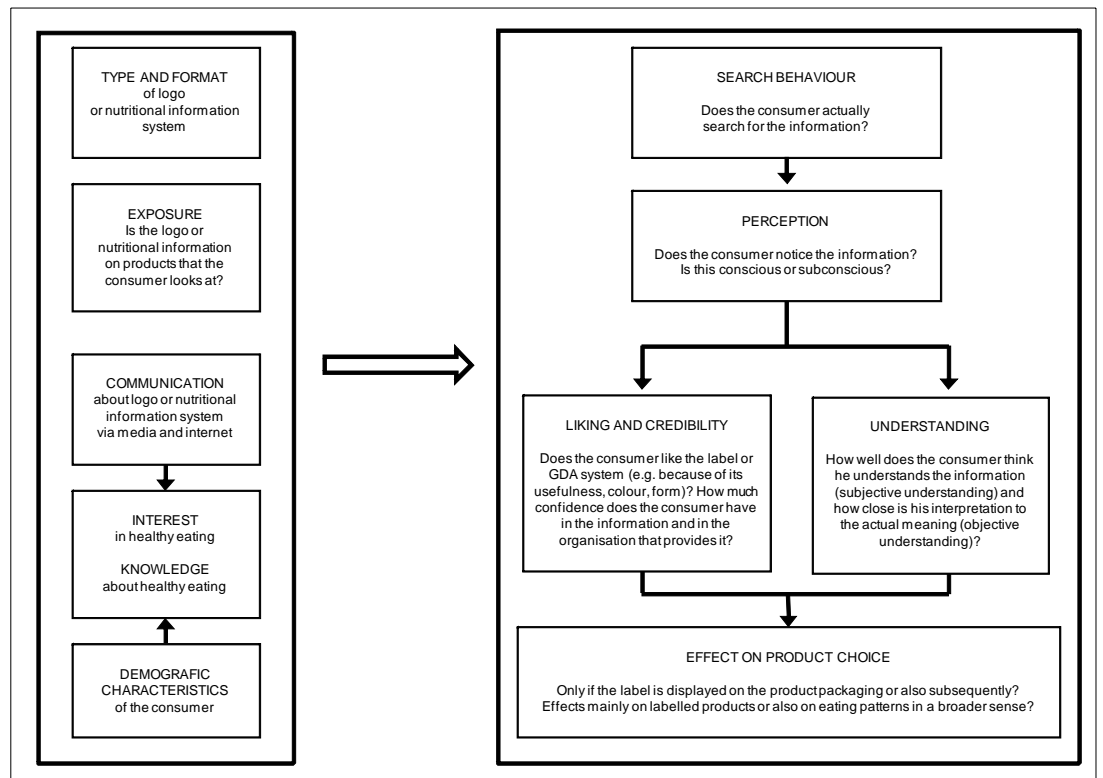


Figure 1 Theoretical model that describes the steps by which the logos and nutritional information can influence product choice (right-hand section) and which characteristics of logo and consumer can influence that process (left-hand section).

hand column. Publicity via internet or media about the meaning of the logo or the nutritional information and about the meaning of lifestyle modifications for health can, according to the committee, lead to more knowledge about and a greater interest in this information and to an increase in the use of these systems in product choice.

4.2 Awareness

Scientific data

What about the awareness of information about the nutritional value? According to Grunert and Wills, it is more likely that this information will play a role in product choice if the consumers are consciously aware of this information, rather than unconsciously aware.¹¹ Based on research, they concluded that the nutritional information on the label is read more often when a product is bought for the first time, than if the product has been purchased more often.¹¹ Although most consumers report that they read the traditional nutritional information on the back or side of the product packaging sometime or often, the results of research during shopping indicate that consumers do not process this information.¹²

A British/Australian study examined the conscious awareness of logos whilst shopping in a supermarket.¹³ The results were gathered for just 44 people. The participants, who did not know that the research was about logos, were asked to wear a recording device during two shopping sessions, on which they recorded their thoughts accompanying product choice. The logos were mentioned by just three (first shopping session) and six (second shopping session) people. This means that either the conscious awareness of the logos was low, or that the logos were not a consideration in product choice. On a questionnaire, completed after the second shopping session, 37 participants indicated that they recognised the logo.

Another British study measured eye movements during the presentation of nutritional information on a computer screen.¹⁴ This study took place in a research centre and therefore does not provide any direct information about the awareness whilst shopping. The study compared two ways of presenting nutritional information: the first was a monochrome presentation of the levels of eight nutritional factors, the second involved the levels of four nutritional factors, represented as favourable, neutral or unfavourable by means of traffic light colours. The eye movements were measured whilst the 92 participants in the study evaluated the nutritional value of the products. The addition of the traffic light label lead to more attention for the nutritional factors that were represented; the differ-

ence was small, but statistically significant. The study set-up made it impossible to determine whether the effect was due to the limitation of the nutritional information (four instead of eight nutritional factors) or the use of traffic light colours.

Women read nutritional information more frequently than men. Furthermore, the attention for this information is higher on average with a higher income, a higher level of education or more interest in the effect of nutrition on health.^{11,12}

Importance of conscious awareness is unclear

A logo or the nutritional information can only play a role in product choice once it has been observed, consciously or unconsciously. The results of the study in which the participants recorded their thoughts accompanying product choice¹³ suggest that the conscious awareness of logos is very limited, even more so because voicing out loud the thoughts associated with product choice may lead to people listing considerations that normally do not play a role in product choice.

Furthermore, this study also illustrates that reported recognition percentages provide little information about conscious awareness. If the assumption by Grunert and Wills (that conscious awareness in particular affects product choice) was correct, one cannot simply accept such reported percentages. Simultaneously, another social psychological study suggests that unconscious awareness can have a noticeable effect.¹⁵ It is possible that unconscious awareness for the use of the logos may be more important than suggested by Grunert and Wills.

Further research is needed to confirm the extent to which the logos and the GDA system are observed and to elucidate the role of conscious and unconscious awareness in product choice.

4.3 Understanding

Scientific data

How well do consumers understand nutritional information? Research demonstrates that consumers sometimes find the traditional nutritional information on the back or side of product packaging difficult to find, read and understand.^{11,12} Some terms are more familiar than others. Consumers often indicate that they understand the terms calories, fat, sugar, vitamins and salt, but that they have trouble understanding the relationships between calories and energy, sodium and salt, sugars and carbohydrates, and terms such as cholesterol, fatty acids, energy percentage and with converting from quantities per 100 grams of product to

quantities per portion. Various studies have concluded that the use of reference values facilitates the interpretation of nutritional information.¹²

Consumers generally find logos and forms of simplified front-of-pack nutritional information easier to understand.^{11,16} The differences in reported comprehension of various front-of-pack systems are small.¹¹ A questionnaire study found a logo (the *healthier choice tick*) to be slightly better understood than the GDA system, but no difference was found in the objective understanding (the correctness of the estimation of the nutritional value of nutritional elements based on this information).¹⁷

Consumers indicate that nutritional information is easier to understand when traffic light colours are used to indicate whether values are favourable, neutral or unfavourable. The objective understanding also seems to improve: consumers are able to estimate the nutritional value more accurately when the nutritional information is colour-coded.^{11,14}

The results of a study from New Zealand indicate that the text on a logo may lead to misconceptions of the significance. The use of the *National Heart Foundation* on the logo lead 20 to 30 percent of respondents to draw the incorrect conclusion that the logo products were specifically intended for people with cardiovascular diseases.¹⁸

Not everyone is able to interpret matters correctly. Nutritional information is less well understood by consumers who are less familiar with this information, by older consumers and by consumers with a lower level of education or income.^{11,12} Consumers who are confident of their own knowledge and interest in this information find the logos and nutritional information easier to understand.¹⁷

A Swedish study revealed that the significance of the *Green Keyhole* logo was more widely known amongst Swedish nationals than amongst residents with another nationality. Non-smokers tend to be slightly more knowledgeable, on average, about this logo than smokers. Finally, women who know the significance of the Swedish *Green Keyhole* logo are generally younger and weigh more than women who know little about it.¹⁹ This may be due to a greater interest in healthy food as a result of attempts to control weight.

Interpretation of Dutch logos and the GDA system

Publicity via media and internet about the meaning of the logos and the GDA system is important for the understanding of this information. The Choices stamp website provides a wider range of information than the website of the Healthy Choice Clover. Further information should be easy to find, for example by refer-

ring to a website on packaging that carries a logo or the GDA system. This is standard procedure on products that carry the Choices stamp, but not always the case for the GDA system and never for the Healthy Choice Clover. The committee thinks that the name of the logo should preferably have a specific association with health (as with the Healthy Choice Clover). *'Healthy Eating stamp'* would be clearer for the consumer than the 'Choices stamp', because a conscious choice for foodstuffs may also refer to other matters, such as environmentally friendly, animal welfare and fair trade.

Data received during and after the hearings from Dutch companies and organisations (annex G), indicate that the majority of consumers associate the Choices stamp and the Healthy Choice Clover with health. The logos are only listed on products with a relatively favourable composition and make these products clearly and directly recognisable.

In contrast, the GDA system can be listed on every food product. The consumer must interpret the numbers and determine for himself/herself whether the composition of the product is relatively favourable or unfavourable. That is not easy, especially because one nutritional factor might be favourable whilst another one is unfavourable. Based on information obtained from companies and organisations during and after the hearings, it appears that half of all people cannot interpret the GDA system (completely) accurately. The committee deems it plausible that the GDA system would be less well understood than the logos. Based on the available research, the committee concludes that the GDA system could be improved by the addition of traffic light colours to indicate whether the values are favourable, neutral or unfavourable.

In the case of both Dutch logos, the Netherlands Nutrition Centre plays a role in setting the criteria for awarding these logos. The publicity surrounding these logos states that 'The Choices stamp is supported by the Netherlands Nutrition Centre' and 'the standards for the Healthy Choice Clover were determined in cooperation with the Netherlands Nutrition Centre'. The committee deems it plausible that this creates the impression that the logo criteria match the Food-Based Dietary Guidelines by the Netherlands Nutrition Centre. However, it became evident in chapter 2 that this is only partly the case.

There are questions that remain

As the committee set out in the previous chapters, logos form part of food education. Seen from that perspective, the following questions are raised for further research:

- Do consumers think that a product with a logo has a favourable composition, or that the logo product has a *relatively* favourable composition within its own product group?
- In addition to the logo, many logo products carry other nutritional information on the packaging that is not related to the logo, for example ‘rich in calcium’, ‘improves bowel function’. Do logos influence the interpretation and the credibility of claims on the same product?
- Do consumers know whether consumption should be limited or promoted for each of the nutritional factors in the GDA system? Do they understand the significance of the reference values from which the GDA percentages are calculated? Are they able to judge the levels of nutritional factors based on this information?

4.4 Attractiveness and credibility

Scientific data

Logos and nutritional information can be observed and understood, but do consumers find them attractive and credible? In general, consumers appear to be positive about logos and simplified nutritional information. Simplicity is attractive. Consumers often need to make quick choices between products whilst shopping. There are also indications that consumers want to know what the logo or information stands for. They find it unpleasant when a decision is made without them being consulted. If people feel forced to make a certain choice, this may lead to resistance. For this reason, logos and *single traffic lights* are often deemed slightly less attractive than nutritional information. They are simpler, but do not match the other two wishes of consumers as closely: further information and freedom of choice. Nutritional information in which traffic light colours are used is deemed more attractive than a presentation with one colour. The traffic light colours simplify the information.¹¹

In a questionnaire amongst 1630 respondents from Germany, Great Britain, Italy and the Netherlands, nutritional information scored slightly higher in attractiveness and credibility than logos. The score for credibility increased if the information was supported by an organisation, with support by the World Health Organisation (WHO) or a national organisation in the field of nutrition scoring higher than support by the European Union or the Confederation of the Food and Drinks Industries.¹⁷ Support by an authoritative organisation can also improve the credibility of health claims.²⁰

With regard to claims, there are indications that the combination of a short message on the front of a package and more information elsewhere on the packaging can improve the credibility.²¹ There has not been any research to determine whether this is also true for logos and nutritional information.

There is only limited information available about the credibility of Dutch logos

Based on data obtained from companies and organisations during and after the hearings (annex G), it seems that the credibility of the Choices stamp is relatively high, although few consumers are able to indicate correctly which organisation originated this logo. The committee does not have any information about the credibility of the Healthy Choice Clover. From the research presented, it appears that the involvement of the Netherlands Nutrition Centre in determining the criteria for awarding the logos can improve the credibility of the logos.

The committee deems it plausible that the extent to which the logos comply with food education is important for the credibility. According to this logic, awarding logos to products that should (according to the Food-Based Dietary Guidelines) be used in moderation, such as sweets or snacks, could damage the credibility of these logos. However, this has not been studied.

4.5 Product choice

Scientific data

Logos and nutritional information are ultimately intended to get consumers to eat a healthier diet. To what extent is this successful? In order to ascribe any effect on the dietary pattern to the logos, the situations with and without logo must be compared. However, this is not possible for logos and nutritional information systems that are introduced nationally. The same applies to the Dutch logos and the GDA system. Some information can be obtained by determining the complete (average) food intake, the proportion of logo products and the role of these logos during shopping in influencing product choice. However, this type of research is also largely unavailable. Sales figures of logo products do not provide information about the dietary pattern and are therefore not informative.

The only study in which the total dietary pattern was examined is the first study relating to the Swedish *Green Keyhole* logo. People who had a better understanding of this logo had a healthier dietary pattern.¹⁹ However, it remains unclear whether this was a causative association: both factors could be the result

of a more conscious choice of food. People who value healthy nutrition would probably also chose the healthier products if they did not carry a logo. The total dietary pattern was not examined during the second study on the *Green Keyhole* logo, but a better understanding of the logo was associated with the consumption of more logo products.²²

Further research could provide more clarity

There is a great need for objective scientific study of the extent to which and the way in which consumers utilise the logos and the GDA system in product choice and about the effects on the dietary pattern. The committee is of the opinion that the following questions are among those that deserve closer attention:

- Do consumers use the logos and the GDA system in product choice? If the GDA system has an effect on product choice: is this dependent on the level of the GDA percentages?
- Has the choice for healthier products become more important to consumers as a result of the introduction of the logos and the GDA system?
- Are there possible unfavourable effects on product choice? For example, will consumers eat more of a certain product if it carries a logo? Do consumers use the logos to create 'space' for the consumption of (more) products with an unfavourable composition? A recent publication on Light products, performed by research bureau GfK, suggests that these types of undesirable mechanisms may occur.²³ Will consumers replace basic products without a logo with non-basic products that do carry a logo?

4.6 Possible misconceptions when interpreting logo's

At this moment, it is not possible to rule out the possibility that the interpretation of the logos may lead to misconceptions. This section contains some examples. An improvement in the dietary pattern only occurs when a move is made within the product groups from products without logo to products with logo and if the quantities that are consumed remain unchanged. No research has been done to determine whether or not consumers are currently aware of this, but the committee deems this unlikely. It also remains unclear whether this message can be brought across to consumers by means of targeted education.

Products that fall into different product groups, despite similarities

Products with obvious similarities that fall into different product groups can create a confusing message to consumers. An example is cheese and meat products. Both products are used as savoury filling for bread, but they fall under different product groups with different criteria. For cheese, the limit for saturated fat is 12 grams per 100 grams of product and for meat products it is 4 grams per 100 grams. People who are used to putting meat products with a relatively high fat content on their bread may decide, based on the logos, to switch to other types of savoury bread filling. If they do not like the lean meat products (with logo) and switch to reduced fat cheese (with logo), they may think that they are improving their diet, whilst they have actually chosen products with an unchanged or even higher level of saturated fat than in the initial situation.

The product group of snacks, biscuits, icecream and sweets

The committee does not object in principle to the awarding of logos to snacks, such as crisps, crackers, biscuits and ice cream, provided that the criteria for these products are sufficiently strict. The committee does note that the awarding of logos to these products may lead to a confusing message for consumers. The problem is not relevant for the Healthy Choice Clover, because snacks are not eligible for this logo.

- *Products without positive nutritional value*

The Choices stamp is currently featured on some types of sweets and ice cream that do not contribute in any way to the provision of nutrients such as vitamins and minerals. This is difficult for consumers to understand, because the information presented by this logos suggests that products with the logo meet international dietary guidelines. The committee is of the opinion that it would be better for the credibility of the logo to formulate additional conditions relating to the positive nutritional value of logo products for all non-basic product groups. This is not necessary for basic products, because these products already have a positive nutritional value by definition.

- *Products that contains substances* with a proven unfavourable effect*

There is currently one type of liquorice for sale that carries the Choices stamp. The committee deems this undesirable, due to the presence of glycyrr-

* Substances other than saturated fat, trans fat, sodium and added sugar are being referred to here.

rhizin, which raises blood pressure. Further research should be performed on other specific substances for which exclusion would be logical and desirable and the way in which this could be achieved.

4.7 Conclusions

The committee concludes the following:

- The central question – whether consumers improve their diet as a result of the logos of the GDA system – cannot be answered using the current scientific knowledge.
- The theoretical model assumes that consumers are more likely to choose logo products if they are more aware of the logos and understand them better and find them more attractive and credible. Again, not much research data is available on this matter.
- Scientific research suggests that consumers are better able to understand nutritional information and find this information more attractive when traffic light colours are used to indicate whether the values are favourable, neutral or unfavourable.
- Research is required into the effects of the logos on the consumer. The committee wishes to point out that, as with brands, the logos need time to establish product familiarity and build a good reputation. The logos are relatively new, it is possibly too soon to tell where they could lead to.

Effects on product development

It is not only the consumers who may be affected by logos and nutritional information but also the producers. To what extent are they stimulated to develop healthier products? This is the question that we shall address in this chapter.

5.1 Lack of scientific data

No scientific publications are available about the effects of logos and the GDA system on product development. In an effort to investigate this situation, the committee invited representatives of a number of major producers and key organisations in this sector to attend a hearing. Annex G contains a list of the attendees at these meetings. The committee has omitted from its assessment the data that emerged during the hearing about the reductions achieved in the quantities of salt, saturated fat, sugar and trans fat that are added to foodstuffs every year through product improvements as a result of the logos since there is no information about the number of products manufactured.

5.2 The route to achieving healthier products

Adjusting product development in order to be awarded a logo or to gain a more positive image within the GDA system means achieving relatively favourable levels of particular nutritional factors. Here the producer has a broad array of options, ranging from relatively simple adjustments to existing production pro-

cesses or products (i.e. reformulation of recipes) to the development of entirely new processes or products (i.e. innovation).

Whether the logos have influenced product development is unclear, but quite plausible

The potential impact of logos on product development will to some extent be governed by the anticipated effects on the sales figures. During the hearing several industry representatives referred to positive sales figures for logo-bearing products, though some of them added that it is unclear whether this is due to the logo. They indicated that more and more consumers are attaching importance to a healthy diet and that companies are responding to this trend through product development in order to remain successful within their sector. Healthier products were already being developed even before the introduction of the logos. Based on the available data, it is impossible to determine whether the logos have increased this trend.

The committee nevertheless considers it likely that the logos have an added value from a commercial standpoint. Representatives of several companies indicated during the hearing that their company prefers to put positively worded statements (such as 'high in calcium') on product packaging rather than negative ones (e.g. 'low in saturated fat'). As a result of the logos, reduced levels of undesirable nutritional factors can now also be brought to the consumer's attention via a positive message (Choices stamp, Healthy Choice Clover). Furthermore, in order to obtain a logo the levels of several nutritional factors have to be relatively favourable. Under these circumstances the committee finds it plausible that the logos do, in fact, influence product development. This potential effect is, however, confined to those products which the producer wishes to present as being healthy (or more healthy). Many of the products on the market are not primarily designed to be healthy.

The impact of differences between logos

The greater the number of products eligible for a particular logo, the greater the potential of that logo to influence product development. The Choices stamp has more power to stimulate product development than the Healthy Choice Clover because it can be used by all food producers, caterers and supermarkets, whereas the Healthy Choice Clover is used exclusively for the Own-Brand products of Albert Heijn. Furthermore, products from all categories are eligible for the

Choices stamp, whereas snacks and 'other products' do not, by definition, qualify for a Healthy Choice Clover.

It is possible that the criteria for awarding a logo may influence the effects on product development. If a product is improved in order to obtain a logo, the aim will be to boost the levels of those nutritional factors that serve as the eligibility criteria for awarding that logo above the relevant threshold value(s). It is therefore conceivable that more lenient criteria result in more products being improved, but less overall progress being made in the right direction, than is the case when criteria are more stringent. This has not been investigated, however. For products with a favourable composition the criteria may leave room for change in an unfavourable direction. There is no research data either on this possibility of unfavourable effects of lenient criteria on product development.

It is unclear whether the GDA system has an impact on product development

The hearing did not produce a conclusive answer to the question as to whether the GDA system encourages product improvements or innovations. Some speakers stated that this information may provide an incentive to improve the least favourable GDA percentages because high GDA percentages are more conspicuous than low GDA percentages. However, another speaker claimed that the GDA system had no effect on product development in his company. The committee believes that the GDA system is less likely to influence sales figures than the logos since it conveys a more complex message to the consumer. The system is therefore likely to have less of an impact on product development than the logos, according to the committee. A nutritional information system which uses traffic light colours to indicate whether values are favourable, neutral or unfavourable, may have a greater potential to stimulate product development than a monochromic system.

Trans fat illustrates the possibilities of product development

The situation with regard to trans fat is interesting for various reasons. At the time the logos were introduced, trans fat had already been largely eliminated from the diet. Estimates put average daily consumption at 25 grams in 1960, 11 grams in 1988, 4 grams in 1998 and 2 grams in 2003.^{24,25} Product development has played a significant role in lowering the consumption of trans fats.²⁵ The reduction of trans fat consumption has been achieved without specific education about the adverse health effects of trans fats and without communicating the

declining levels of trans fatty acids in products to the consumer.²⁵ The logos have given the companies a means of getting this relatively difficult message across to the consumer in an implicit manner.

5.3 Conclusions

The committee has arrived at the following conclusions:

- It is not possible to give an evidence-based answer to the question regarding the extent to which logos stimulate the food industry to develop healthier products.
- Based on the information from the hearings and the nature of the logos, the committee finds it plausible that the logos might provide an incentive to improve existing products or develop new ones. The hearings have produced no clear-cut evidence that the GDA system influences product development.

Conclusions and recommendations

In this final chapter the committee briefly outlines its principal findings and, in doing so, answers the Minister's questions. It then goes on to make a number of recommendations.

6.1 Principal findings

The current eligibility criteria for the two logos do not sufficiently tie in to the food education

In the opinion of the committee it is extremely important that the criteria for awarding the logos should be consistent with the food education given by the Netherlands Nutrition Centre and therefore with the Dutch Food-Based Dietary Guidelines.⁵ This situation is complicated, however, by the fact that the logos are based on a two-tier system (foodstuffs are either awarded a logo or they are not), whereas the nutritional guidelines encompass three tiers:

- Category A or 'preferable' products are helpful in achieving a healthy diet
- Category B or 'in moderation' products are neutral in achieving a healthy diet
- Category C or 'occasional' products are unhelpful in achieving a healthy diet.

In their present form, the committee believes that the logos ought only to be awarded to the 'preferred' (category A) products. There are, however, only a few product categories in which the criteria for granting the Choices stamp and

the Healthy Choice Clover can guarantee this. In the majority of product groups, category B ('in moderation') or even category C ('for occasional use') products are also able to meet the criteria and are therefore eligible for a logo. The committee regards this situation as undesirable, since the logos then can create an incorrect impression in the mind of the consumer.

For the purposes of nutrition education, the threshold values for product evaluation are based, as far as possible, on data concerning food consumption in the Netherlands. The B/C threshold values then correspond to the current intake of the nutritional factor from the relevant product group and the A/B threshold values correspond to the desired improvement for that nutritional factor. The criteria for awarding the Choices stamp are not based on food consumption data but on the range of products currently on the market, with the requirement being that around 20% of the basic foods* and around 10% of the non-basic foods** must be eligible for the Choices stamp.

The differences between the criteria for awarding the Healthy Choice Clover and those applying to the Food-Based Dietary Guidelines cannot be attributed to differing frames of reference. However, it is evident that in many product categories fewer nutritional factors are evaluated for the Healthy Choice Clover.

In order to minimise confusion among consumers, the committee finds it very important that nutritional education should be consistent. It is therefore undesirable that the criteria for granting the two logos differ from each other and from the criteria that are applied by the Netherlands Nutrition Centre in formulating nutritional education. At present, Dutch consumers are faced with three different systems for the health-based assessment of foodstuffs.

The committee's guiding principle that the logos must be completely consistent with the general public education about healthy eating imposes high quality standards on the food education issued by the Netherlands Nutrition Centre. The Committee makes a number of recommendations in annex H with regard to the procedural transparency of the Food-Based Dietary Guidelines and the need to ensure that they have adequate support and quality assurance. In this annex it also highlights certain aspects of the current evaluation system that require fur-

* Basic food categories are the groups of products that play an important role in the provision of essential nutrients (vitamins, minerals, essential fatty acids and essential amino acids), dietary fibre and water. The basic food categories encompass vegetables, fruit, bread, potatoes, pasta, rice, legumes, fish, meat and meat products, poultry, eggs, meat substitutes, dairy products, spreadable fats, cooking fats and beverages.

** Non-basic food categories play little or no role in the provision of essential nutrients, dietary fibre and water. Examples of non-basic food categories are snacks, biscuits, confectionery, sauces, and soups that are intended as a starter or snack.

ther consideration. Noting that the Food-Based Dietary Guidelines form a dynamic system which is constantly evolving, the committee finds it important that the logos should keep pace with these developments.

The nutritional factors in the GDA system are insufficiently attuned to the Dutch Guidelines for a healthy diet 2006

Just like the logos, the GDA system is also intended to help consumers to choose relatively healthy products. Unlike the logos, however, this scheme requires consumers to make their own judgement on the product's nutritional value based on the values that are displayed. The committee believes that the GDA icons on the front of the product packaging should only give information with sufficient relevance for judging the place of the product in a healthy eating pattern. In so far as the European legislation on nutrition labelling relates to nutritional factors that have little bearing on the health-based assessment of foodstuffs, the committee maintains that this information should only be displayed on the back of the packaging.

Based on the Dutch Guidelines for a healthy diet 2006¹, the committee concludes that four of the six nutritional factors that can feature in the GDA system have an important role to play in the health-based assessment of foodstuffs: calories, saturated fat, sodium and dietary fibre. According to the committee, information concerning the levels of these nutritional factors ought to be displayed on the front of product packaging. The total fat content and the total sugar content are mainly of relevance in connection with the problem of obesity. The calorie content per portion is, however, already specified separately in the GDA system. Anyone wishing to reduce the total fat content of their diet – with a view to preventing heart disease – will need to focus on the fats with adverse health effects (saturated fat and trans fat). Those who want to reduce the risk of caloric overconsumption via sugars should focus on *free sugars*. In the light of the above comments, the committee opposes the inclusion of total sugar and total fat in the GDA system, but favours the inclusion of free sugars and trans fat.

The committee does not agree with the freedom of choice that exists in relation to the number of nutritional factors that are presented in the GDA system. The six nutritional factors that play a key role in the health-based assessment of products calories, saturated fat, trans fat, sodium, free sugars and dietary fibre should always be included. If this information is consistently provided, the consumer will be properly informed and the system will have an educational value.

In the GDA system, the amount per portion is also given as a percentage of the upper limit, average requirement or recommended daily intake. The committee agrees with the reference values that are used for calories, saturated fat and sodium. No reference values have yet been adopted for the nutritional factors that do not currently feature in the GDA system but in the opinion of the committee ought to be included. For trans fat, the committee believes that the reference value should be based on the Dutch upper limit of one per cent of total energy intake¹; for free sugars it should be based on the WHO's upper limit for free sugars of 10 per cent of total energy²⁶, and for dietary fibre it should be based on the Dutch guideline of 1.4 grams dietary fibre per 100 kcal¹.*

It is unclear whether consumers interpret the logos correctly

The development of the logos is interesting in so far as they tell the consumer in a single picture that a given product is compatible with a healthy diet. The committee finds it plausible that logos may help consumers to make relatively healthy food choices quickly when shopping. It appears that the majority of people recognise the Choices stamp and the Healthy Choice Clover and know that these logos have something to do with the nutritional value of the product, but there is little scientific research on the question of whether consumers interpret the logos correctly and whether or not certain misconceptions considered possible by the committee do, in fact, occur. Research is therefore needed on the interpretation of the logos.

Many consumers have insufficient nutritional knowledge to interpret the information from the GDA system

The GDA system provides more information than the logos in that it shows the levels per portion of up to six nutritional factors. However, it takes more time and thought to use this system when choosing a product. The available research indicates that around 50% of consumers are unable to interpret individual values in the GDA system correctly (e.g. because they do not know whether some or all of the nutritional factors have a positive or negative impact on health). Peer-reviewed research on the interpretation of the GDA system as a whole is scarce. Research does suggest that the use of traffic light colours in the GDA system

* The upper limits and guideline relate to the total daily food intake (and not the levels found in the product). These values are converted into grams per day based on a total energy intake of 2000 kilocalories, giving the actual reference values.

assists understanding. The GDA system is mainly of interest to consumers who have a specific interest in nutrition and are sufficiently knowledgeable on this topic.

It is not known whether the logos and the GDA system are effective in promoting healthy consumer choices

In his request for advice the Minister points out the importance of a healthier choice of food in connection with the battle against obesity and the prevention of chronic diseases. The nature of the logos implies that they might be more effective in preventing cardiovascular diseases than in combating obesity, but there is insufficient research to draw conclusions about the effects on the diet, body weight and the risk of chronic diseases. The fact that consumers choose products with a logo is no guarantee that their diet will improve. That is only the case if they replace products without a logo with the same quantities of products bearing a logo from the same product group. It is not known how many consumers are aware of this. Little is known either about the effectiveness of the GDA system. Further research is needed in order to shed more light on this matter. Consumer surveys do indicate, however, that the fact that a logo is supported by a trusted organisation is good for consumer confidence.

Effects on product development are plausible for the logos, but there are insufficient signs that the GDA system has such an effect

Because logos provide an integral summary of a health-based assessment of a product, they encourage producers to bring products into line with the criteria for several nutritional factors simultaneously. The committee finds it plausible that logos may stimulate product development. There is, however, insufficient evidence that the GDA system has such an effect.

6.2 Ideal scenario

The ideal scenario for the promotion of healthy food choices in the Netherlands would be to use a single logo that is absolutely consistent with the public education on healthy eating. As every product that satisfies the labelling criteria would then carry this logo, both its presence on the packaging and its absence would inform the consumer about the product's nutritional value. This would provide a clearer message to the consumer. Furthermore, the front of every pack (regard-

less of whether there is a logo) would ideally display the nutritional information that is needed in order to judge the nutritional value of the foodstuff in question.

6.3 Recommendations for achieving the ideal situation

Develop a single logo with two different formats

If the current logos are to be absolutely consistent with nutritional education, the criteria should correspond to those specified for category A products in the Food-Based Dietary Guidelines. This approach would be most in keeping with the recommendations made in the Health Council's Guidelines for a healthy diet 2006. However, this means that the labelling criteria must be substantially tightened, with the drawback that a large number of products will then lose the logo. This may erode consumer confidence in the logos and undermine the potential effect on product development. Moreover, it may disadvantage consumers by narrowing their choice of products bearing a logo. The committee therefore suggests that a logo should be developed with two different formats: one format for the 'preferred' (category A) products and the other for the 'in moderation' (category B) products. First of all, however, research would be needed to show that consumers are able to understand this distinction.

Improve the GDA system

The committee believes that the GDA system should always contain information about the levels of calories, saturated fat, trans fat, free sugars, sodium and dietary fibre. The comprehensibility of the GDA system is a concern. In the United Kingdom traffic light colours are used to indicate whether levels of saturated fat and sodium are favourable, neutral or unfavourable. The Committee recommends that an investigation should be conducted into how the use of colours in the GDA system can improve consumer understanding of this information.

Set up a broad-based information system

At present the two logos and the GDA system each have their own websites. It is unclear to the consumer how compatible these systems are with each other and with general nutritional education. According to the committee, it is important for the consumer that there should be a single website which explains the logos and the GDA system within the context of the general public education about

healthy eating. This information system must highlight those aspects of public information on healthy eating that are perhaps not adequately conveyed by the logos and the GDA system, notably the importance of basic foods, the recommended amounts per product group, the importance of a healthy and varied diet, and the need for physical exercise.

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Annexes

The request for advice

On 5 June 2007 the President of the Health Council of the Netherlands received the following request for advice on logos that promote healthy food choices from the Minister of Health, Welfare and Sport:

In the battle against obesity and the prevention of chronic diseases it is important to help people to make healthy choices about eating. The food industry must also be stimulated to make their products healthier. It was with this in mind that my predecessor called in early 2005 for a simple, positive and voluntary logo that would encourage people throughout the Netherlands to make healthier eating and drinking choices. There are now three initiatives that aim to help Dutch consumers to make healthier choices: the *Energy* logo, the Healthy Choice Clover and the Choices stamp.

In May 2006 three food producers presented the Minister of Health, Welfare and Sport with the Choices stamp and an underlying system. During the presentation my predecessor expressed support for the initiative in principle and indicated a wish to receive advice from your Council on the criteria that have been applied.

The Choices stamp organisation is supported by a committee of independent experts (including the Netherlands Nutrition Centre) which has in recent months evaluated and further developed the underlying framework and the criteria for the logo. It has also taken into account the current dietary guidelines. The organisation has indicated that it now proposes to start working with the new criteria. This therefore strikes me as a good moment to seek your advice on these criteria.

As mentioned above, there are other logos on the market that promote healthy food choices, such as the Albert Heijn *Healthy Choice Clover* and the Dutch food industry's *Energy* logo. I would request that you also include those logos in your advisory report.

The Regulation on Nutrition and Health Claims Made on Foods has been in force since 1 July 2007. This stipulates that products may only bear a claim if they conform to a specific profile (which has yet to be formulated). Your advisory report may assist in the discussion of these profiles.

Request for advice

With reference to section 4.12 of your Council's Work Programme 2007, and further to discussions that have been conducted with your Secretariat at departmental level, I would request that you prepare an advisory report on logos that promote healthy food choices. In this report I would ask you to provide a scientific opinion on:

- the criteria applied (also in relation to product categories),
- the interpretation of the logos by the consumer,
- the effectiveness of logos in promoting healthy consumer choices,
- the extent to which logos encourage the food industry to develop healthier products.

I look forward to receiving your advisory report later this year.

The Minister of Health, Welfare and Sport,
(signed) Dr. A. Klink

The committee

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- Prof. D. Kromhout, *chairman*
Vice President of the Health Council of the Netherlands
 - Dr. M.A.E. van Bokhorst-de van der Schueren
Head of Nutrition and Dietetics Department, VU University Medical Center,
Amsterdam
 - W. Bosman
Former secretary of the Standing Committee on Nutrition, Health Council of
the Netherlands, The Hague
 - J.W. van den Brink, *adviser*
Ministry of Health, Welfare and Sport, The Hague
 - Dr. M. Dekker
Associate Professor of Product Design and Quality Management,
Wageningen University and Research Centre
 - Prof. A.W. Hoes
Professor of Clinical Epidemiology and General Practice, University Medical
Centre, Utrecht
 - Dr. J.A. Iestra
Member of staff, Department of Nutritional Sciences and Dietetics,
University Medical Centre, Utrecht
 - Prof. F.J. Kok
Professor of Nutrition and Health, Wageningen University and Research
Centre
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- Prof. H.P. Sauerwein
Professor of Energy Metabolism, Academic Medical Centre, Amsterdam
- Prof. N.K. de Vries
Professor of Health Promotion, University of Maastricht
- Prof. C.M.J. van Woerkum
Professor of Communication Strategies, Wageningen University and Research Centre
- Prof. M.H. Zwietering
Professor of Food Microbiology, Wageningen University and Research Centre
- Dr. C.J.K. Spaaij, *secretary*
Health Council of the Netherlands, The Hague
- Dr. R. Weggemans, *co-secretary*
Health Council of the Netherlands, The Hague

The Health Council and interests

Members of Health Council Committees are appointed in a personal capacity because of their special expertise in the matters to be addressed. Nonetheless, it is precisely because of this expertise that they may also have interests. This in itself does not necessarily present an obstacle for membership of a Health Council Committee. Transparency regarding possible conflicts of interest is nonetheless important, both for the President and members of a Committee and for the President of the Health Council. On being invited to join a Committee, members are asked to submit a form detailing the functions they hold and any other material and immaterial interests which could be relevant for the Committee's work. It is the responsibility of the President of the Health Council to assess whether the interests indicated constitute grounds for non-appointment. An advisorship will then sometimes make it possible to exploit the expertise of the specialist involved. During the establishment meeting the declarations issued are discussed, so that all members of the Committee are aware of each other's possible interests.

C

Glossary

Added sugar

Added sugar are all monosaccharides and disaccharides that are added to foodstuffs by the manufacturer, cook or consumer.

Amino acids

Amino acids are the chemical building blocks that make up proteins. The body is able to synthesise some amino acids, but not others. The latter are referred to as 'essential amino acids' because it is essential that they should be present in the diet.

CIAA

The Confederation of the Food and Drink Industries in the European Union.

Claim

Claims (verbal or pictorial) made with regard to the supposedly beneficial health effect or beneficial constituents of a food or food supplement.²⁷ Such claims are governed by the EU Regulation on Nutrition and Health Claims Made on Foods, in force since 1 July 2007.

Dietary fibre

A collective term for those parts of plant-based food that are not digested or absorbed in the human small intestine. Dietary fibre is required in order to maintain proper gut function. Consumption of dietary fibre is associated with a lower risk of coronary heart disease, among other disorders.²⁸

Fatty acids

Dietary fat consists largely of triglyceride molecules, which are composed of glycerol and fatty acids. Fatty acids can be either saturated or unsaturated. Unsaturated fatty acids contain one or more double bonds between carbon atoms. These double bonds have two possible configurations, which are designated as the *cis* form and the *trans* form. Saturated fatty acids and monounsaturated *trans* fatty acids are unhealthy in that they increase the risk of coronary heart disease (among other disorders). Monounsaturated *cis* fatty acids and polyunsaturated fatty acids are healthy precisely because they lower that risk.

There are only two fatty acids which the body is unable to synthesise: linoleic acid and alpha-linolenic acid. These two compounds are designated as 'essential fatty acids' because it is essential that they are present in the diet.

FNLI

The Federation of the Dutch Food and Grocery Industry.

Food-Based Dietary Guidelines for the Netherlands

A report by the Netherlands Nutrition Centre⁵ in which the guidelines relating to the overall diet (the Guidelines for a healthy diet 2006) were translated into guidelines on choosing individual foodstuffs. The report considers both the composition of foodstuffs and the average amounts that may be used. (See also section 2.1.)

Foodstuff

A type of food or drink, such as: bread, milk, meat products, vegetables, fish, soup, biscuits, ice creams.

Free sugars

Free sugars are all monosaccharides and disaccharides that are added to foodstuffs by the manufacturer, cook or consumer, plus the naturally occurring sugars in honey and syrups and fruit juices.⁹

GDA system

A new form of information about a product's nutritional value, which is to be displayed on the front of the packaging. GDA stands for Guideline Daily Amount. The nutritional information consists both of the number of grams per portion and the same amount expressed as a percentage of the guideline daily amount that has been adopted for this system. The GDA system was developed by the European food industry umbrella organisation (CIAA). The Federation of the Dutch Food and Grocery Industry (FNLI) also uses the Dutch term *Dagelijkse Voedingsrichtlijn* (abbreviated to *DVR*).

Generic threshold value

A criterion for assessing the nutritional value of foodstuffs. The generic threshold values are expressed either as a percentage of energy intake or in (milli)grams per 100 kilocalories. The generic threshold value for saturated fat, trans fat, added sugar and sodium has been set at 1.3 times the upper limits for these nutritional factors. For dietary fibre the generic threshold value has been set at the same level as the recommended dietary fibre content of the diet. See also annex F.

Guidelines for a healthy diet 2006

The report Guidelines for a healthy diet 2006 was published by the Health Council in 2006^{1,2} and discusses key aspects of the impact of diet and exercise on health. The dietary guidelines outlined in this report relate to the overall diet. The report forms the basis for the food education provided by the Netherlands Nutrition Centre. (See also section 3.1.)

Insignificance level

A criterion for assessing the nutritional value of foodstuffs. Insignificance levels are principally intended to discourage significant additions of undesirable nutrients such as saturated fat and sodium. The insignificance levels are expressed in (milli)grams per 100 grams of the product. When the insignificance level is applied, 100 grams of the product will contain no more than 5 percent of the daily upper limit (sodium) or no more than 5 percent of the generic threshold level (saturated fat, trans fat, and added sugar). See also annex F.

Logo

Whenever the word 'logo' is used in this report without any further qualification, it refers to the logos that are designed to promote healthy food choices and, in particular, the Choices stamp of the Choices stamp organisation and the Healthy Choice Clover of the Albert Heijn supermarket chain.

Nutrient

A nutrient is a molecule that can be absorbed and utilised by the body. Examples are: vitamins, minerals, fatty acids, amino acids, fibre and carbohydrates.

Nutrient profile

Under the European Regulation on Nutrition and Health Claims (regulation number 1924/2006), in force since 1 July 2007, products may in future only bear a claim if they conform to so-called 'nutrient profiles'. The nutrient profiles are currently under development and it is

not yet known precisely what form they will take. Their purpose is to prevent claims being made in future on products with an ‘unhealthy’ composition. The Regulation describes the nutrient profiles as follows:

(10) The application of nutrient profiles as a criterion would aim to avoid a situation where nutrition or health claims mask the overall nutritional status of a food product, which could mislead consumers when trying to make healthy choices in the context of a balanced diet. Nutrient profiles as provided for in this Regulation should be intended for the sole purpose of governing the circumstances in which claims may be made. They should be based on generally accepted scientific evidence relative to the relationship between diet and health. However, profiles should also allow for product innovation and should take into account the variability of dietary habits and traditions, and the fact that individual products may have an important role in the context of an overall diet.

(11) The establishment of nutrient profiles should take into account the content of different nutrients and substances with a nutritional or physiological effect, in particular those such as fat, saturated fat, trans-fatty acids, salt/sodium and sugars, excessive intakes of which in the overall diet are not recommended, as well as poly- and mono-unsaturated fats, available carbohydrates other than sugars, vitamins, minerals, protein and fibre. When setting the nutrient profiles, the different categories of foods and the place and role of these foods in the overall diet should be taken into account. Exemptions from the requirement to respect established nutrient profiles may be necessary for certain foods or categories of foods depending on their role and importance in the diet of the population. These are complex technical tasks and the adoption of the relevant measures should be entrusted to the Commission, taking into account the advice of the European Food Safety Authority.

Nutritional factor

The term ‘nutritional factor’ is used in this report as an umbrella term for the foods, nutrients and calories that serve as criteria for granting the nutrition logos or feature in the GDA system.

Nutrition labelling system

The form in which information concerning the nutritional value of products is presented on product packaging.

Nutritional value

The nutrient content of a foodstuff.

Saturated fat

The term ‘saturated fat’ is used in this report as an abbreviation for ‘saturated fatty acids’. Saturated fatty acids increase the risk of coro-

nary heart disease, among other disorders. See also the explanation of the term 'fatty acids'.

Sodium

Sodium is one of the two constituents of sodium chloride (salt). Sodium raises the blood pressure.

Trans fat

The term 'trans fat' is used in this report as an abbreviation for 'monounsaturated trans fatty acids'. Trans fats increase the risk of coronary heart disease, among other disorders. See also the explanation of the term 'fatty acids'.

WHO

The World Health Organization (WHO) is a specialised agency of the United Nations based in Geneva with the purpose of monitoring and assessing global health matters, coordinating healthcare activities and promoting the health of the world's population. The WHO was established by the United Nations on 7 April 1948.

D

Criteria used in the Food-Based Dietary Guidelines and for the two logos

The tables on the pages that follow show the criteria for granting the Choices stamp (as at April 2008) and the Healthy Choice Clover (as at August 2008), together with the criteria for the Food-Based Dietary Guidelines (as at October 2007). The product categories are listed in the sequence used in the Food-Based Dietary Guidelines.

The Food-Based Dietary Guidelines divide products into three categories: category A contains the products that should be preferred for health reasons, while category B contains the products to be used in moderation and category C contains the products which for health reasons should only be used occasionally. The A/B criteria represent the threshold between category A and category B and the B/C criteria represent the threshold between category B and category C. The tables give the A/B and B/C threshold values and also indicate the nutritional factors for which the A/B criteria are the same as the B/C criteria and those for which they are different.

Wherever possible, the footnotes in this annex adopt the same wording as the documents issued by the Netherlands Nutrition Centre, the Choices stamp organisation and Albert Heijn.

Food-Based Dietary Guidelines

Product group	A/B criteria	B/C criteria	Comparison of A/B and B/C criteria	
			Same	Different
Vegetables	All fresh, sliced, chopped, tinned & frozen vegetables with nothing added are category A products.	Vegetable products: ^a Saturated fat: not added Trans fat: not added Sodium ≤ 120 mg / 100 g Added sugar: none Fibre ≥ 1.3 g / 100 kcal		Saturated fat Trans fat Sodium Added sugar Dietary fibre
Fruit	All fresh, peeled, sliced, tinned & frozen fruit with nothing added are category A products.	Fruit products: ^a Saturated fat: not added Trans fat: not added Sodium ≤ 120 mg / 100 g Added sugar: none Fibre ≥ 1.3 g / 100 kcal		Saturated fat Trans fat Sodium Added sugar Dietary fibre
Bread and cereal products ^b	Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 600 mg / 100 g Fibre ≥ 2.4 g / 100 kcal	Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 600 mg / 100 g Added sugar ≤ 3.25 g / 100 g Fibre ≥ 1.3 g / 100 kcal	Saturated fat Trans fat Sodium	Added sugar Dietary fibre

^a Processed vegetables and fruit belong in this product group if they satisfy the criteria specified in annex E.

^b Bread and cereal substitute products belong in this product group if they satisfy the criteria specified in annex E. Substitute products are new products that are assigned to a particular basic food category, even though they do not belong there in terms of their origin and/or composition. An example in the case of bread are the new cake-like products that are claimed as possible substitutes for bread in terms of composition and/or use.

Choices stamp		Healthy Choice Clover	
Product group	Criteria	Product group	Criteria
Fresh, frozen or sliced vegetables, legumes or fruit with nothing added. ^a	These products are always eligible for the Choices stamp.	Fresh vegetables, fruit and herbs with nothing added	These products are always eligible for the Healthy Choice Clover.
Processed vegetables, legumes or fruit including vegetable juices, but not including fruit juices. ^b	Saturated fat: ≤ 1.4 g / 100 g Trans fat: ≤ 0.14 g / 100 g Sodium: ≤ 120 mg / 100 g Added sugar: none Fibre: ≥ 1.3 g / 100 kcal	Processed vegetables, herbs and vegetable juices ^c	Saturated fat ≤ 1 g / 100 g Sodium ≤ 0.25 g / 100 g Added sugar: none Fibre ≥ 1.3 g / 100 kcal Folate ≥ 15 mcg / 100 g Vitamin C ≥ 8 mg / 100 g
Fruit juices with at least 98% juice.	Saturated fat: ≤ 1.4 g / 100 g Trans fat: ≤ 0.14 g / 100 g Sodium: ≤ 120 mg / 100 g Added sugar: none Fibre: ≥ 0.75 g / 100 kcal	Processed fruits, fruit juices, fruit drinks, smoothies, fruit/vegetable juices and fruit/vegetable drinks ^c	Saturated fat ≤ 1 g / 100 g Added sugar: none Fibre ≥ 1.3 g / 100 kcal Folate ≥ 10 mcg / 100 g Vitamin C ≥ 8 mg / 100 g
Bread and bread substitutes, not including breakfast cereals. ^b	Saturated fat: ≤ 1.4 g / 100 g Trans fat: ≤ 0.14 g / 100 g Sodium: ≤ 500 mg / 100 g ^d Added sugar: ≤ 13% energy Fibre: ≥ 1.3 g / 100 kcal	Bread, bread substitutes, bread mixes ^e	Saturated fat ≤ 1 g / 100 g Sodium ≤ 0.5 g / 100 g Fibre ≥ 6 g / 100 g
Cereals and cereal products such as breakfast cereals, (rice) flour, breadcrumbs, binding agents, pancake flour. ^b	Saturated fat: ≤ 1.4 g / 100 g Trans fat: ≤ 0.14 g / 100 g Sodium: ≤ 120 mg / 100 g Added sugar: ≤ 3.25 g / 100 g Fibre: ≥ 1.3 g / 100 kcal	Breakfast cereals, ready-to-eat pancakes	Saturated fat ≤ 1 g / 100 g Sodium 0.5 ≤ g / 100 g Added sugar: none Fibre ≥ 6 g / 100 g

^a Products in these product categories do not need to be tested by the testing body.

^b Products belong in this product group if they satisfy the criteria specified in annex E.

^c This product may also contain other ingredients. The presence of another ingredient at a level of 10% does not influence the assessment of this product. If the level is between 10% and 50%, the other ingredient will be assessed in its own category.

^d This threshold value will be reduced within two years.

^e These are bread mixes that only require the addition of water (and/or yeast). For these bread mixes, the criteria apply to the finished product.

Food-Based Dietary Guidelines

Product group	A/B criteria	B/C criteria	Comparison of A/B and B/C criteria	
			Same	Different
Potatoes, rice, pasta, legumes	Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 120 mg / 100 g Added sugar: none Fibre ≥ 4 g / 100 kcal	Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 120 mg / 100 g Added sugar: none Fibre ≥ 1.3 g / 100 kcal	Saturated fat Trans fat Sodium Added sugar	Dietary fibre
Meat, chicken, eggs	Saturated fat ≤ 4 g / 100 g Trans fat: not added Sodium ≤ 120 mg / 100 g ^a Added sugar: none	Saturated fat ≤ 5 g / 100 g Trans fat: not added Sodium ≤ 120 mg / 100 g ^a Added sugar: none	Trans fat Sodium Added sugar	Saturated fat
Meat products and vegetable-based meat substitutes ^b	Saturated fat ≤ 4 g / 100 g Trans fat: not added Sodium ≤ 1000 mg / 100 g Added sugar ≤ 3.25 g / 100 g	Saturated fat ≤ 5 g / 100 g Trans fat: not added Sodium ≤ 1000 mg / 100 g Added sugar ≤ 3.25 g / 100g	Trans fat Sodium Added sugar	Saturated fat
Fish	All fresh fish with nothing added, soused herring (salted raw herring) and pickled herring (rollmops) are category A products	Processed fish and fish products: ^b Saturated fat ≤ 5g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 450 mg / 100 g Added sugar: none.		Saturated fat Trans fat Sodium Added sugar

^a Sodium must not be added to eggs.

^b Substitute products and processed products belong in this product group if they satisfy the criteria specified in annex E.

Choices stamp		Healthy Choice Clover	
Product group	Criteria	Product group	Criteria
Unprocessed raw potatoes with nothing added (may be peeled or sliced) ^a	These products are always eligible for the Choices stamp.	Potatoes and legumes ^b	Saturated fat ≤ 1 g / 100 g Sodium ≤ 0.12 g / 100 g Fibre ≥ 3 g / 100 g
Potatoes (processed), rice, pasta, noodles	Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 120 mg / 100 g Added sugar: none Fibre ≥ 1.3 g / 100 kcal	Pasta, rice, flour and baking mixes ^{b,c}	Saturated fat ≤ 1 g / 100 g Sodium ≤ 0.12 g / 100 g Fibre ≥ 3 g / 100 g
Meat, poultry, eggs (unprocessed)	Saturated fat ≤ 13% energy ^d Trans fat ≤ 0.14 g / 100 g ^e Sodium ≤ 120 mg / 100 g Added sugar: none	Meat, processed meat, meat products, meat substitutes and similar products. ^b	Saturated fat ≤ 4 g / 100 g Sodium ≤ 1.0 g / 100 g ^f These products must not be coated with breadcrumbs.
Processed meat, meat products and meat substitutes ^g	Saturated fat ≤ 13% energy ^d Trans fat ≤ 0.14 g / 100 g ^e Sodium ≤ 900 mg / 100 g Added sugar ≤ 3.25 g / 100 g	Eggs, raw or cooked ^b	Saturated fat ≤ 4 g / 100 g
Fresh or fresh frozen fish, shellfish and crustaceans	Saturated fat ≤ 30% of total fat ^d Trans fat ≤ 0.14 g / 100 g Sodium ≤ 120 mg / 100 g Added sugar: none	Fresh or fresh frozen fish, shellfish and molluscs with nothing added	These products are always eligible for the Healthy Choice Clover.
Processed fish or fish products ^g	Saturated fat ≤ 13% energy ^d Trans fat ≤ 0.14 g / 100 g Sodium ≤ 450 mg / 100 g Added sugar: none	Processed fish, fish products, shellfish and molluscs. ^b	Saturated fat ≤ 4 g / 100 g Sodium ≤ 1.0 g / 100 g These products must not be coated with breadcrumbs.

^a Products in these categories do not need to be tested by the testing body.

^b This product may also contain other ingredients. The presence of another ingredient at a level of 10% does not influence the assessment of this product. If the level is between 10% and 50%, the other ingredient will be assessed in its own category.

^c The criteria for pasta, rice, flour and baking mixes refer to the level in the uncooked product.

^d If the product contains less than the insignificance level of this nutrient, it also satisfies the criteria for this nutrient. The insignificance levels are as follows: saturated fat: < 1.4 g/100 g; trans fat: < 0.14 g/100 g; sodium: < 120 mg/100 g; added sugar: < 3.25 g/100 g. (See also annex F.)

^e Does not apply to natural trans fat derived from meat or milk.

^f The sodium standard does not apply to smoked beef and horse meat with a reduced salt content.

^g Products belong in this product group if they satisfy the criteria specified in annex E.

Food-Based Dietary Guidelines

Product group	A/B criteria	B/C criteria	Comparison of A/B and B/C criteria	
			Same	Different
Milk and dairy products ^a	Saturated fat ≤ 0.5 g / 100 g Trans fat: not added Sodium ≤ 120 mg / 100 g Added sugar: none	Saturated fat ≤ 1.4 g / 100 g Trans fat: not added Sodium ≤ 120 mg / 100 g Added sugar ≤ 5 g / 100 g	Trans fat Sodium	Saturated fat Added sugar
Cheese ^a	Saturated fat ≤ 12 g / 100 g Trans fat: not added Sodium ≤ 1000 mg / 100 g Added sugar: none	Saturated fat ≤ 18 g / 100 g Trans fat: not added Sodium ≤ 1000 mg / 100 g Added sugar: none	Trans fat Sodium Added sugar	Saturated fat
Fats and oils ^a	Saturated fat ≤ 16 g / 100 g Trans fat 1.3% energy or 1 g / 100 g ^b Sodium ≤ 1.6 mg / kcal Added sugar: none	Saturated fat ≤ 30% of total fat Trans fat ≤ 1.3% energy or 1 g / 100 g Sodium ≤ 1.6 mg / kcal Added sugar: none.	Trans fat Sodium Added sugar	Saturated fat

^a Substitute products and processed products belong in this product group if they satisfy the criteria specified in annex E.

^b The criterion for the low-fat variants is: trans fat ≤ 1 g / 100 g.

Choices stamp		Healthy Choice Clover	
Product group	Criteria	Product group	Criteria
Milk & dairy products ^a	Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g ^b Sodium ≤ 120 mg / 100 g Added sugar ≤ 5 g / 100 g ^c	Dairy products, quark and similar (plant-based) products. ^{d,e}	Saturated fat ≤ 0.5 g / 100 g ^f Sodium ≤ 0.12 g / 100 g Added sugar: none
		Products intended as an alternative to cream. ^{d,e}	Saturated fat ≤ 1 g / 100 g ^f No added sodium Added sugar: none
Cheese and cheese products ^a	Saturated fat ≤ 15 g / 100 g Trans fat ≤ 0.14 g / 100 g ^b Sodium ≤ 900 mg / 100 g Added sugar: none	Cheese, cheese spread and similar products. ^{d,e}	Saturated fat ≤ 12 g / 100 g Sodium ≤ 0.9 g / 100 g Added sugar: none
Fats and oils, including spreadable fats ^a	Saturated fat ≤ 30% of total fat ^c Trans fat ≤ 1.3% energy Sodium ≤ 1.6 mg / kcal Added sugar: none	Fats or blends of fats (as defined in EU Regulation No. 2991/94 of 5.12.94 concerning spreadable fats) and similar products. ^{d,e}	Saturated fat ≤ 16 g / 100 g ^f Sodium ≤ 0.3 g / 100 g Added sugar: none
		Other spreadable products intended as sandwich fillings that do not fall into one of the two above-mentioned product categories, consisting mainly of milk and/or vegetable oils and fats and/or fish oil.	Saturated fat ≤ 16 g / 100 g ^f Sodium ≤ 0.6 g / 100 g Added sugar: none
		Oils, baking, frying and deep-frying products. ^d	Saturated fat ≤ 16 g / 100 g ^f

^a Products belong in this product group if they satisfy the criteria specified in annex E.

^b Does not apply to natural trans fat derived from milk.

^c This value will be reduced within two years.

^d This product may also contain other ingredients. The presence of another ingredient at a level of 10% does not influence the assessment of this product. If the level is between 10% and 50%, the other ingredient will be assessed in its own category.

^e These products may be seasoned.

^f In the case of products consisting mainly of vegetable fat, the criterion for saturated fat is always less than or equal to the sum of the saturated fat + trans fat.

Food-Based Dietary Guidelines

Product group	A/B criteria	B/C criteria	Comparison of A/B and B/C criteria	
			Same	Different
Beverages	Energy ≤ 4 kcal / 100 ml Saturated fat: not added Trans fat: not added Sodium ≤ 120 mg / 100 g	Energy ≤ 20 kcal / 100 ml Saturated fat: not added Trans fat: not added Sodium ≤ 120 mg / 100 g	Saturated fat Trans fat Sodium	Energy
Soups	Energy ≤ 60 kcal/portion Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 350 mg / 100 g	Energy ≤ 110 kcal / portion Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 350 mg / 100 g	Saturated fat Trans fat Sodium	Energy
Sauces	Energy ≤ 100 kcal / 100 g Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 450 mg / 100 g	Energy ≤ 300 kcal / 100 g Saturated fat ≤ 30% of total fat Trans fat ≤ 1.3% energy Sodium ≤ 750 mg / 100 g		Energy Saturated fat Trans fat Sodium
Snacks	Energy ≤ 60 kcal / portion Saturated fat ≤ 13% energy Trans fat ≤ 1.3% energy Sodium ≤ 400 mg / 100 g	Energy ≤ 110 kcal / portion Saturated fat ≤ 13% energy Trans fat ≤ 1.3% energy Sodium ≤ 400 mg / 100 g	Saturated fat Trans fat Sodium	Energy
Other	Energy ≤ 200 kcal / 100 g Saturated fat ≤ 13% energy Trans fat ≤ 1.3% energy Sodium ≤ 1.6 mg / kcal	Energy ≤ 350 kcal / 100 g Saturated fat ≤ 13% energy Trans fat ≤ 1.3% energy Sodium ≤ 1.6 mg / kcal	Saturated fat Trans fat Sodium	Energy

Choices stamp		Healthy Choice Clover	
Product group	Criteria	Product group	Criteria
Beverages, not including dairy products and fruit juices	Energy ≤ 32 kcal / 100 ml ^a Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 120 mg / 100 g	Beverages, not including fruit and/or vegetable juices or drinks, smoothies and dairy products	Energy ≤ 4 kcal / 100 ml Sodium ≤ 0.12 g / 100 g
Soups	Energy ≤ 100 kcal / 100g Saturated fat ≤ 1.4 g / 100g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 350 mg / 100 g ^a Added sugar ≤ 3.25 g / 100 g	Soups and bouillon (cubes, etc) ^b	Saturated fat ≤ 1 g / 100 g ^c Sodium ≤ 0.35 g / 100 g
Meal sauces (sauces with a portion size > 35 grams)	Energy ≤ 100 kcal / 100 g Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 450 mg / 100 g Added sugar ≤ 3.25 g / 100 g	Hot cooking sauces and gravy ^b	Saturated fat ≤ 1.4 g / 100 g ^c Sodium ≤ 0.45 g / 100 g
Sauces with a portion size < 35 grams, water-based	Energy ≤ 100 kcal / 100 g Saturated fat ≤ 1.4 g / 100 g Trans fat ≤ 0.14 g / 100 g Sodium ≤ 750 mg / 100 g	Salad sauces and dressings	Saturated fat ≤ 1.4 g / 100 g ^c Sodium ≤ 0.75 g / 100 g
Sauces with a portion size < 35 grams with emulsifier or with fat content > 10% w/w	Energy ≤ 350 kcal / 100 g ^d Saturated fat ≤ 30% of total fat ^e Trans fat ≤ 1.3% energy ^e Sodium ≤ 750 mg / 100 g Added sugar ≤ 13% energy ^e		
Snacks	Energy ≤ 110 kcal / portion Saturated fat ≤ 13% energy ^e Trans fat ≤ 1.3% energy ^e Sodium ≤ 400 mg / 100 g Added sugar ≤ 20 g / 100 g		
Other products	Saturated fat ≤ 13% energy ^e Trans fat ≤ 1.3% energy ^e Sodium ≤ 1.6 mg / kcal ^e Added sugar ≤ 13% energy ^e		

^a This value will be reduced within two years.

^b The criteria relate to the levels in the prepared product.

^c In the case of products consisting mainly of vegetable fat, the criterion for saturated fat will always be less than or equal to the sum of the saturated fat + trans fat.

^d This value will be reduced to 300 kcal / 100 g within two years.

^e If the product contains less than the insignificance level of this nutrient, it also satisfies the criteria for this nutrient. The insignificance levels are as follows: saturated fat: < 1.4 g/100 g; trans fat: < 0.14 g/100 g; sodium: < 120 mg/100 g; added sugar: < 3.25 g/100 g. (See also annex F.)

Food-Based Dietary Guidelines

Product group	A/B criteria	B/C criteria	Comparison of A/B and B/C criteria	
			Same	Different
Main courses and meals	Saturated fat ≤ 13% energy Trans fat ≤ 1.3% energy Sodium ≤ 1.6 mg / kcal Added sugar ≤ 13% energy Fibre ≥ 1.3 g / 100 kcal Vegetables ≥ 150 g / portion Energy (kcal / portion): - ready-to-eat meal: 400-700 - entire meal: 550-950	Saturated fat ≤ 16% energy Trans fat ≤ 1.3% energy Sodium ≤ 2.2 mg / kcal Added sugar ≤ 13% energy Vegetables ≥ 150 g / portion Energy (kcal / portion): - ready-to-eat meal: 400-700 - entire meal: 550-950	Trans fat Added sugar Energy	Saturated fat Sodium Dietary fibre
Filled rolls, lunch, breakfast	Saturated fat ≤ 9% energy Trans fat ≤ 1.3% energy Sodium ≤ 1.6 mg / kcal Added sugar ≤ 13% energy Fibre ≥ 1.3 g / 100 kcal Vegetables 50 g portion Energy (kcal / portion): - Filled rolls: 350 - Breakfast: 200-350 - Lunch: 350-600	Saturated fat ≤ 13% energy Trans fat ≤ 1.3% energy Sodium ≤ 1.9 mg / kcal Added sugar ≤ 13% energy Fibre ≥ 0.8 g / 100 kcal Energy (kcal / portion): - Filled rolls: 350 - Breakfast: 200-350 - Lunch: 350-600	Trans fat Added sugar Energy	Saturated fat Sodium Dietary fibre Vegetables

Choices stamp		Healthy Choice Clover	
Product group	Criteria	Product group	Criteria
Ready-to-eat meals for lunch or evening meal ^a	Saturated fat ≤ 13% energy ^b Trans fat ≤ 1.3% energy ^b Sodium ≤ 2.2 mg / kcal ^c Added sugar ≤ 13% energy ^b Vegetables ≥ 150 g / portion Energy 400-700 kcal / portion	Ready-to-eat meals	Saturated fat ≤ 16% energy ^d Sodium ≤ 0.4 g / 100 g Cooked vegetables (excl. potatoes) ≥ 150 or ≥ 115 g / portion ^e Energy 400-700 kcal / portion The basic components must collectively make up a balanced meal.
		Pizzas and quiches (no sweet or dessert pastries)	Saturated fat ≤ 16% energy ^d Sodium ≤ 0.7 g / 100 g Energy: 400-700 kcal / portion Include the recommendation to combine with vegetables
Filled rolls ^a	Saturated fat ≤ 13% energy ^b Trans fat ≤ 1.3% energy ^b Sodium ≤ 1.9 mg / kcal Added sugar ≤ 13% energy ^b Fibre ≥ 0.8 g / 100 kcal Energy ≤ 350 kcal / portion	Sandwiches and toasted sandwiches	The distinguishing ingredients of the sandwich or toasted sandwich must satisfy the criteria from their respective category. Non-distinguishing ingredients may account for 10% of the total sandwich filling.
		Lunch dishes	Energy: 300-550 kcal / portion Saturated fat ≤ 9% energy ^d Sodium ≤ 0.4 g / 100 g Cooked vegetables (excl. potatoes) ≥ 50 or ≥ 35 g per portion ^e The basic components must collectively make up a balanced meal.

- ^a If all components of the composite meal satisfy the criteria in their particular product group and the meal satisfies the energy and fibre criteria for the meal in question then the meal also satisfies the criteria for the logo.
- ^b If the product contains less than the insignificance level of this nutrient, it also satisfies the criteria for this nutrient. The insignificance levels are as follows: saturated fat: < 1.4 g/100 g; trans fat: < 0.14 g / 100 g; sodium: < 120 mg / 100 g; added sugar: < 3.25 g / 100 g. (See also annex F.)
- ^c This value will be reduced within two years.
- ^d In the case of products consisting mainly of vegetable fat, the criterion for saturated fat will always be less than or equal to the sum of the saturated fat + trans fat.
- ^e If there is a recommendation on the pack that the product should be combined with vegetables, the lower threshold value for the amount of vegetables per portion will apply; if there is no such recommendation on the pack, the higher threshold value will apply. Fruit and vegetables are interchangeable, provided that they satisfy the criteria for the Healthy Choice Clover for their own product group.

E

Procedure for determining whether a product belongs in the intended basic food category

Food-Based Dietary Guidelines

The Netherlands Nutrition Centre adopts the following procedures when deciding whether composite products*, substitute products** and processed products*** belong in a particular basic food category.

A composite product is assigned to a particular basic food category if at least 80% of it belongs in that category.

Examples: If a product consists of fish and a sauce, it falls into the basic food category 'fish' if it contains at least 80% fish, whereas if it contains less than 80% fish, it falls into the non-basic food category 'sauces'. Milk-based drinks fall into the 'milk and milk products' category if at least 80% of their content consists of milk and milk products; if not, they are classified as 'beverages'.

* Composite products are products containing ingredients from a number of product categories.

** Substitute products are products which fit into a basic food category in terms of their use, but have a different origin or composition. For example, vegetable-based meat substitutes are a substitute product for meat or meat products (depending on their form). The Netherlands Nutrition Centre has formulated criteria with regard to substitute products for bread, milk & milk products, cheese, meat, fish, poultry, fats and oils.

*** Processed products are basic foods that have been processed in such a way that nutrient levels may have been substantially altered. The Netherlands Nutrition Centre has formulated criteria for processed vegetables and fruit. Fruit and vegetable products in which the original matrix of the fruit or vegetable is not intact anymore, by definition are classified as processed vegetables/fruit.

The decision as to whether a substitute product or a processed product belongs in the intended basic food category is based on the levels of individual micronutrients (vitamins A, B₁, B₆, B₁₂, C and folate, and the minerals calcium and iron). Which micronutrients and which threshold values these are will depend on the basic food category in question. For each product group the Netherlands Nutrition Centre has selected the two or three principal micronutrients and, in some cases where there is a perceived risk of deficiency, made certain micronutrients mandatory (see the table later in this annex). The products must meet the threshold value for at least two micronutrients. Furthermore, bread substitutes and processed vegetables and fruit are subject to additional requirements. Bread substitutes must be made with iodised salt, while the levels of folate and vitamin C in processed vegetables and fruit must not have been achieved by means of fortification.

Examples: Tomato juice falls into the basic food category ‘processed vegetables’ because it contains levels of at least two of the three nutrients specified for this product group (folate, vitamin C and vitamin A) that meet the threshold values. Orange juice falls into the basic food category ‘processed fruit’, because it contains sufficient folate and vitamin C. Apple juice and grape juice do not meet these threshold values and fall within the product group ‘beverages’.

Choices stamp

The Choices stamp organisation also assigns foodstuffs to particular basic food categories according to a procedure which stipulates that the levels of two nutrients must meet certain threshold values. There are, however, a number of differences between this procedure and the approach adopted by the Netherlands Nutrition Centre (see annex F):

- More nutrients have been selected per product group in the Choices stamp scheme.
 - There are four nutritional factors (vitamin B₂, D and E and dietary fibre) that feature in the Choices stamp procedure, but not in the Netherlands Nutrition Centre procedure.
 - In the Choices stamp scheme there is an overlap in two product categories between the method for assessing whether a product belongs in a particular basic food category and the assessment of whether the product may bear the logo (fibre content is used for both).
 - The Choices stamp organisation does not impose any additional conditions.
 - In many cases the Choices stamp organisation applies the same threshold values as the Netherlands Nutrition Centre. In some cases, however, the thresh-
-

Threshold values per 100 grams (the products must meet two of the specified values).

Product category	Organisation ^a	Fibre	Vitamin A	Vitamin B1	Vitamin B2	Vitamin B6	Folate	Vitamin B12	Vitamin C	Vitamin D	Vitamin E	Calcium	Iron	Iodine
Fruit	NNC						10 ^{b,c} mcg		8 ^{b,c} mg					
Vegetables	NNC		70 mcg				15 ^c mcg		8 ^{b,c} mg					
Fruit and vegetables	Cso	2.5 g	70 mcg				40 mcg		7.5 mg					
Bread	NNC					0.13 mg	15 ^b mcg						0.8 mg + ^d	
Bread and cereals	Cso	2.5 g		0.11 mg		0.13 mg	40 mcg						0.8 mg	
Milk and milk products	NNC							0.28 ^b mcg				100 ^{b)} mg		
Cheese	NNC							0.28 ^b mcg				600 ^{b)} mg		
Milk and milk products	Cso				0.11 mg		40 mcg	0.24 mcg				100 mg		
Meat, fish, poultry	NNC			0.05 mg				0.14 mcg					0.8 ^b mg	
Meat, fish, poultry	Cso		70 mcg	0.11 mg				0.24 mcg		0.5 mcg			0.8 mg	
Fats, oils	NNC		+ ^e							+ ^e				
Fats, oils	Cso		70 mcg							0.5 mcg	1.5 mg			

^a NNC = Netherlands Nutrition Centre; Cso = Choices stamp organisation.

^b All substitute products must satisfy this criterion.

^c The emphasis is on the amounts of the relevant nutrients that are present in nature, since these are regarded as a marker for bioactivity and for the degree of processing.

^d In order to fall within the product group 'bread', the product must not only satisfy the criteria for both folate and vitamin B6 or iron, but must also be made with iodised salt.

^e Fat spreads and cooking fats (with the exception of oil) must contain the permitted levels of added vitamin A (retinol) and vitamin D.

old value is higher (vitamin B₁ and vitamin B₁₂ in meat, fish and poultry; folate in vegetable & fruit products, bread & cereals and milk & dairy products) and in one case it is lower (calcium in cheese).

Based on the first four differences, the Choices stamp procedure is less strict than that of the Netherlands Nutrition Centre, but this is possibly partly offset by the differences identified in the fifth point.

Healthy Choice Clover

Albert Heijn has not provided details of how it will judge whether a product belongs in a particular basic food category. However, in processed vegetables and fruit the levels of folate and vitamin C are criterion for granting the Healthy Choice Clover.

F

**Background information on criteria
Food-Based Dietary Guidelines and
Choices stamp**

The Netherlands Nutrition Centre⁵ and the Choices stamp organisation⁶ have described in detail on what basis and how they derive the threshold values for the product evaluation. No such explanation is available for the Healthy Choice Clover. The threshold values for this scheme are based on those adopted by the Netherlands Nutrition Centre, with certain exceptions. This annex gives brief descriptions of the procedures used by the Netherlands Nutrition Centre and the Choices stamp organisation.

Food-Based Dietary Guidelines

The Netherlands Nutrition Centre uses three types of threshold values to assign products into the three designated categories:

- generic threshold values* (expressed as ‘per kilocalorie’)
- insignificance levels (expressed as ‘per 100 grams’)
- product group-specific threshold values (usually expressed as ‘per 100 grams’).

The unit is an important element here. The generic threshold values are expressed either as a percentage of energy intake or in grams per 100 kilocalo-

* The Netherlands Nutrition Centre speaks of ‘generic criteria’. In this advisory report we use the term ‘generic threshold value’ in order to emphasise that these are, in fact, threshold values.

ries, whereas the insignificance levels and the product group-specific threshold values are expressed in grams (or milligrams) per 100 grams of product. The choice of unit can have a major impact on an evaluation. The generic threshold value for products with a very low calorie content can, for example, result in nonsensical assessments. An example is mineral water, which contains a certain amount of sodium. As mineral water contains no calories, the sodium content appears to be very high if it is expressed per 100 kilocalories. For products of this type, the assessment of sodium content should be based on the content per 100 millilitres rather than the content per 100 kilocalories.

The mechanisms underlying the three types of threshold value are explained in the following paragraphs.

Generic threshold values and insignificance levels.

Dietary component	Generic threshold value	Insignificance level ^a	Upper limit / recommendation	
			on which the generic threshold value is based	in the Guidelines for a healthy diet 2006
Saturated fat	13% energy	1.4 grams/100 grams	≤ 10% energy ^b	≤ 10% energy
Trans fat	1.3% energy	0.14 gram/100 grams	≤ 1% energy ^b	≤ 1% energy
Sodium	1.6 mg/ kcal	120 mg/100 grams	≤ 2.4 grams per day ^c	≤ 2.4 grams per day
Dietary fibre	1.3 grams/ 100 kcal	Not applicable	> 1.3 grams/ 100 kcal ^d	1.4 grams/ 100 kcal
Added sugar	13% energy	3.25 grams/100 grams	≤ 10% energy ^e	If BMI ^f <25: no guideline; If BMI > 25: as little as possible

^a At the insignificance level for sodium, 100 grams of the product contains 5% of the daily upper limit; for saturated fat, trans fat and added sugar, this is 5% of the generic threshold value (i.e. 6.5% of the daily upper limit).

^b In accordance with the WHO upper limit⁸, which corresponds to the Health Council's upper limit.¹

^c In accordance with the Health Council's upper limit¹. The WHO upper limit is stricter (2.0 grams per day)⁹.

^d In accordance with the WHO recommendation⁸, which is lower than the Health Council guideline.¹

^e In accordance with the WHO upper limit for free sugars.⁹

^f BMI stands for Body Mass Index, which is calculated as weight (in kilograms) divided by the square of the height (in metres).

Generic threshold values

The generic threshold value for dietary fibre has been set at the same level as the recommended total dietary fibre content. For saturated fat, trans fat, added sugar and sodium the generic threshold value has been set at 1.3 times the upper limits for these nutritional factors. The generic threshold values for saturated fat, trans fat and sodium are based on recommendations and upper limits that conform to the upper limits given in the Guidelines for a healthy diet 2006. However, no upper limit has been established for added sugar in the Netherlands. This generic threshold value is based on the WHO's upper limit for free sugars. The WHO

recommendation is also adopted for dietary fibre, even though there is a Dutch guideline, which is higher than the WHO recommendation.

The generic threshold values for saturated fat, trans fat and sodium are generally used for ready-to-eat meal products, snacks and 'other products'. For dietary fibre the generic threshold value is applied in virtually all product groups that have a fibre criterion.

Insignificance levels

Insignificance levels have been established for nutritional factors whose consumption needs to be limited even though the product group contains only minor quantities of this nutritional factor (e.g. fat in fruit). These are intended to discourage significant additions of such undesirable nutrients as saturated fat and sodium. Unlike the generic threshold values, these threshold values are not expressed as a percentage of energy, but as an amount per 100 grams of product. When the insignificance level is applied, 100 grams of product will contain no more than 5% of the daily upper limit in the case of sodium, or no more than 5% of the generic threshold value (i.e. 6.5% of the upper limit) in the case of saturated fat, trans fat and added sugar.*

Product group-specific threshold values

In some cases there is reason to deviate from the generic threshold values and insignificance levels:

- The nature of certain products allows the threshold value to be set at a more stringent level than the generic threshold value and the insignificance level (examples are the lower threshold value for saturated fat and the requirement that trans fat must not be added to milk and dairy products in category A).
- In some cases it is necessary to apply less stringent criteria than the generic threshold values or insignificance levels so that there are products in categories A, B and C. This applies if the levels encountered in a particular product group deviate unfavourably from the levels found in an average daily diet. Examples include the threshold values for sodium in bread and for saturated fat in cheese.

* Thus the procedure applied in order to convert the generic threshold value for saturated fat (13 per cent of total energy intake) into the insignificance level is as follows. Given a daily energy consumption of 2000 kcal, the generic threshold value results in an intake of $0.13 \times 2000 = 260$ kcal from saturated fat. As fat has a calorific value of 9 kcal per gram, this equates to a maximum consumption of $260 / 9 = 28.9$ grams of saturated fat per day. The insignificance level corresponds to 5% of this amount and is therefore $0.05 \times 28.9 = 1.4$ grams.

Where less stringent threshold values are required for saturated fat, added sugar and dietary fibre, the Netherlands Nutrition Centre usually* bases the threshold values for category B on the average intake of the nutrient from the product group in question. For example, the amount of meat consumed in the average diet contains 5 grams of saturated fat per 100 grams. This is the B/C threshold value. The A/B threshold value is set at a level 30% more favourable than the B/C threshold value (i.e. 0.7 times the B/C threshold for saturated fat and added sugar and 1.3 times the B/C threshold for dietary fibre).

As there is insufficient consumption data for trans fat and sodium to permit the above-mentioned derivation method, the Netherlands Nutrition Centre has based the product group-specific threshold values on the levels recorded for products from the relevant product group in the Netherlands Nutrient Databank (NEVO).²⁹ The threshold values for trans fat have generally been chosen in such a way that they encourage product innovation and are technologically feasible, but this does not currently apply in the case of the product group-specific threshold values for sodium.

Choices stamp

Like the Netherlands Nutrition Centre, the Dutch Choices stamp organisation uses generic threshold values, insignificance levels and product group-specific threshold values. The generic threshold values and insignificance levels are the same as those applied by the Netherlands Nutrition Centre.

In several product categories, the assessment performed for the Choices stamp is less strict than the assessment for the Netherlands Nutrition Centre's category A. This is probably mainly because the Choices stamp organisation has a rule of thumb that approximately 20% of basic foods and approximately 10% of non-basic foods must be eligible for the Choices stamp. Although the Netherlands Nutrition Centre also stipulates that certain products from each product group must fall into category A, this does not have to be a specific percentage of the products on the market. The Netherlands Nutrition Centre bases its threshold values as much as possible on data concerning current food consumption in the Netherlands and the desired future improvements.

If the specified percentages cannot be achieved either with the generic threshold values or with the insignificance levels, the Choices stamp organisation

* Exceptions are the threshold values for saturated fat in fats and oils and in sauces.

sets product group-specific threshold values.* To determine what percentage of products are able to meet a particular threshold value, the Choices stamp organisation consults the Netherlands Nutrient Databank (NEVO)²⁹, similar databases from other countries and a number of corporate databases. Generally speaking, basic foods are not branded goods. For these products, the analysis in relation to the 20% rule is based principally on nutrient databases. Non-basic foods, on the other hand, frequently *are* branded goods. When making a judgement as to whether 10% of the existing non-basic foods satisfy the criteria, the Choices stamp organisation is guided by databases of branded goods.

The insignificance levels are used more frequently by the Choices stamp organisation than by the Netherlands Nutrition Centre**.

* When the threshold values for the Choices stamp were published in 2007, it was announced that certain threshold values would be made more stringent in 2009. These are the threshold values for: sodium in bread, ready-to-eat meals and soups; saturated fat in oils and fats; added sugar in milk and milk products; and energy in sauces with a portion size of less than 35 grams.

** There are certain product categories (processed vegetables and fruit, fruit juices, meat & meat products, milk & milk products, cheese & cheese products and beverages) in which the Choices stamp uses insignificance levels, whereas the Netherlands Nutrition Centre applies a stricter criterion. In other product categories (ready-to-eat meal product categories, snacks and 'other products'), the Netherlands Nutrition Centre only uses the generic threshold value, whereas the Choices stamp organisation grants the logo if the product conforms either to the generic threshold value or to the insignificance level. This too may signify a relaxation of the assessment. In particular, the committee believes that more widespread use of the insignificance levels is undesirable if they are applied in product categories that are consumed in substantial quantities on a daily basis, if they lead to a less stringent assessment than the generic threshold values, or where both of these conditions apply. This is probably most likely in the case of beverages and soups.

Hearings with producers, stakeholder organisations and experts

Little or no scientific research has been published in peer-reviewed journals about the perception and use of the Dutch logos and the GDA system and about the effects on product development. The committee has therefore sought information from companies, stakeholder organisations and experts via hearings. These hearings took place on 9 October 2007 and were attended by the members of the committee that produced this advisory report. The committee's Chairman, Prof. D. Kromhout presided over the hearings.

The information that the committee obtained during and after the hearings provides a certain amount of insight, but has little scientific cogency. The committee has used the main points arising from this information to supplement its deliberations.

Hearing focusing on consumer understanding and the effects on consumers

The principal questions posed at the hearing on consumer understanding of the information and how this information is used in making product choices were as follows:

- How familiar are Dutch consumers with the Choices stamp, the Healthy Choice Clover and the GDA system?
 - Are the logos correctly understood and interpreted by the consumer?
-

- How and to what extent is purchasing behaviour influenced?
- Are there differences between particular groups of consumers?

The following organisations and individuals took part in this hearing:

Company/organisation	Representative	Position
Albert Heijn	Ms. M. ter Braak	Quality Manager, Regulatory Affairs
	Ms. S. Hertzberger	Head of Quality and Product Integrity
Unilever	Ms. G. Feunekes	Manager, Vitality Change Programme
Friesland Foods	Ms. P. Dekker	Nutrition Officer
Kellogg's	Ms. E. Battenberg	Corporate Communication Manager, Kellogg's Benelux
PepsiCo International	Mr. C-J. Adema	Director of Public and Government Affairs, Northern Europe
Coca Cola	Mr. S. Ronsmans	Science & Nutrition Manager, NW Europe
Choices stamp organisation	Mr. J. Seidell	Chairman of the Choices stamp organisation's Scientific Committee
FNLI	Ms. C. Grit	Manager, Nutrition and Health
Dutch Consumer Association	Ms. P. Oerlemans	Nutrition researcher
Dutch Heart Foundation (NHS)	Ms. I. van Dis	Policy officer, Science team
Netherlands Nutrition Centre	Mr. B. Breedveld	Head of the knowledge services department
Wageningen University/Unilever	Mr. H. van Trijp	Professor of Marketing and Consumer Behaviour, Wageningen University and Research Centre, and part-time Senior Scientist, Consumer Behaviour, Unilever Food & Health Institute
Erasmus University	Mr. P. Verlegh	Assistant Professor, Department of Marketing Management

At this hearing and subsequently, information was presented about surveys that have been conducted via the internet among existing Dutch panels and sample groups. The committee has received additional information about these surveys after the hearing.

- Two surveys have been conducted at the initiative of the Choices stamp organisation: the first in September and October 2006 (1,032 adults; the baseline survey) and the second in August and September 2007 (1,127 adults; the follow-up-survey). The respondents were representative in respect of age, region, size of household and size of residence. The response was 61% in the baseline survey and 78% in the follow-up survey.³⁰
- Two surveys were conducted in October 2007 at the initiative of Albert Heijn in which 1,500 people were asked questions mainly about the Healthy Choice Clover and another 918 were interviewed about the Choices stamp. Accord-

ing to the researchers, both were nationally representative samples of the target group, which was men and women aged 20-69 years who are responsible for the daily shopping.³¹⁻³⁴

- In the Dutch Consumer Association's Logoland survey, 400 consumers were presented with six logos (including the Choices stamp and the Healthy Choice Clover) and two nutrition labelling systems (including the GDA system) via a questionnaire. According to the authors, the panel was representative of the Dutch adult population.^{35,36}

In addition, the committee obtained information through the FNLI (the Federation of the Dutch Food and Grocery Industry) about a British survey on the GDA system, which was conducted among 500 adults in three periods between October 2006 and October 2007.³⁷⁻³⁹

Hearings focusing on the effects on producers

Due to the competitive sensitivity of the information the committee arranged three separate hearings on this topic, which focused respectively on the Healthy Choice Clover, the Choices stamp and the GDA system. The issues explored were:

- The companies' policy with regard to the development of healthier products and recent policy developments.
- Effects of the Choices stamp, the Healthy Choice Clover and the GDA system on the development of healthy products.

The following organisations and individuals took part in these three hearings:

Hearing on the impact of the Healthy Choice Clover on product development.

Company/organisation	Representative	Position
Albert Heijn	Ms. S. Hertzberger	Head of Quality and Product Integrity
	Ms. M. ter Braak	Own Brands Manager, Marketing
	Mr. M. Vencken	Quality Manager, Regulatory Affairs
	Ms. L. Hoogerwerf	Labelling Officer

Hearing on the impact of the Choices stamp on product development.

Company/organisation	Representative	Position
Unilever	Ms. G. Feunekes	Manager, Vitality Change Programme
	Ms. M. Mooren	Technical Manager, Savoury Products
Friesland Foods	Ms. P. Dekker	Nutrition Officer
Campina	Ms. S. Horst	Corporate Quality Assurance Manager

Choices stamp organisation	Mr. J. Seidell	Chairman of the Choices stamp organisation's Scientific Committee
	Ms. E. Klitsie	Choices stamp organisation

Hearing on the impact of the GDA system on product development.

Company/organisation	Representative	Position
Kellogg's	Mr. T. Hulshof	Nutrition Science & Innovation Manager, Kellogg's Europe
	Ms. E. Battenberg	Corporate Communication Manager, Kellogg's Benelux
Danone	Mr. G. de Bekker	Nutrition Manager
PepsiCo International	Mr. C-J. Adema	Director, Public and Government Affairs, Northern Europe
Mars NL	Mr. M. Gorsselink	Nutrition & Science Manager
	Ms. A. Boekholt	Corporate Affairs Manager
Coca Cola	Mr. S. Ronsmans	Science & Nutrition Manager, NW Europe
FNLI	Ms. C. Grit	Manager, Nutrition and Health

Recommendations for translating Guidelines for a healthy diet into FBDG

The central role which, according to the committee, the Food-Based Dietary Guidelines must play in the logo criteria demands a high level of quality. In this annex the committee makes a number of recommendations with regard to the process and the specific content of the guidelines.

Recommendations regarding the process

The committee feels there is a need to improve the transparency of the process whereby the Food-Based Dietary Guidelines are formulated, including the role of experts and stakeholders, and the evaluation and compliance management of these guidelines. The committee recommends that the Netherlands Nutrition Centre should set up a committee of experts to formulate the Food-Based Dietary Guidelines.* Active involvement of the Netherlands Nutrition Centre in the derivation of logo criteria may jeopardise the organisation's independent position if the criteria constitute a relaxation of the Food-Based Dietary Guidelines and especially if this involvement is mentioned in consumer information regarding the logos.

* There is an analogy with the need for the Medicines Evaluation Board to be independent from the pharmaceutical industry.

Recommendations regarding the guidelines themselves

- *The calculation and application of generic threshold values*

The generic threshold values for saturated fat, trans fat, sodium and added sugar are calculated by adding 30% to the upper limit (see annex F for further information). The reasoning behind this addition is that the upper limits relate to the total daily food intake, that these nutrients only occur in some foodstuffs, and that the levels in specific products may therefore be somewhat higher than the upper limit.

The committee believes that the reasoning cited in the previous paragraph is principally applicable to basic foods and non-basic foods, but less suitable for ready-to-eat meal products. Since every meal consists of a number of foodstuffs or ingredients, the argument that the nutritional factors are only found in some of the products does not hold true for ready-to-eat meal products. For these products it would be more logical to seek to ensure that their composition conforms to the desired composition of total daily food intake. In the case of ready-to-eat meal products, the committee therefore concludes that it would be good, for nutritional reasons, to tighten the threshold values for the levels of saturated fat, trans fat, sodium and added sugar, preferably to the level of the upper limits. The possibilities for taking this action will, of course, be determined in part by feasibility considerations.

The committee notes that the amount of the increment that is added (30%) when calculating the generic threshold value is an arbitrary choice. This ought to be reconsidered in connection with a future review of the Food-Based Dietary Guidelines.

- *The calculation and application of insignificance levels*

Calculation of insignificance levels is based on the principle that 100 grams of the product may contain 5% of the upper limit (sodium) or 5% of the generic threshold value (saturated fat, trans fat, added sugar). See annex F for a further explanation of this calculation. The committee advocates that those performing these calculations should consistently choose between *either* the upper limit *or* the generic threshold value. Furthermore, it argues that 5% is an arbitrary percentage and should be reconsidered during a future review of the Food-Based Dietary Guidelines. According to the committee, the nature of the insignificance levels is such that restraint should be exercised when applying them, especially in the case of products that are consumed in relatively large portions, such as dairy products and soups.

- *Trans fat*

Calculation of the generic threshold value for trans fat is based on the Dutch upper limit for trans fat of one per cent of total energy intake. In the case of basic foods of animal origin, however, the criterion for trans fat applies only to trans fats of vegetable origin. Animal-origin trans fats are not taken into account in these product categories. This being the case, the committee emphasises that the generic criterion should not be based on the upper limit of 1% energy, but on a lower value.

There is insufficient scientific evidence to justify treating trans fat of animal origin differently to trans fat of vegetable origin.^{1,40-42} Nevertheless, the committee has little objection to the decision only to evaluate the basic foods of animal origin for trans fats of vegetable origin, since the threshold values for saturated fat also serve to limit the trans fats of animal origin in these products.

- *Dietary fibre*

The generic threshold values for saturated fat, trans fat, sodium and added sugar are calculated by adding 30% to the upper limit. This is not done in the case of dietary fibre. According to the committee, however, there is no health-based reason to follow a different procedure for dietary fibre. Dietary fibre just like saturated fat, trans fat, sodium and added sugar is only found in some of the products that are consumed.

The generic criterion for dietary fibre is based on the WHO recommendation for fibre intake (1.3 g/100 kcal)⁹, which is a little lower than the Dutch guideline (1.4 g/100 kcal)¹. The committee advocates using the Dutch guideline.

- *Added sugar*

Anyone wishing to limit calorie intake through sugars should focus on free sugars, because especially the free sugars can lead to caloric overconsumption. Free sugars are all monosaccharides and disaccharides that are added to foodstuffs by the manufacturer, cook or consumer, plus the naturally occurring sugars in honey and syrups and fruit juices.⁹ The committee recommends to evaluate the level of free sugars of products instead of added sugar. The current generic threshold value is based on the WHO's upper limit for free sugars of 10% energy and is too high because 'free sugars' is a broader term than added sugar.

- *Sodium*
The Food-Based Dietary Guidelines state that the threshold values for sodium are based on average levels in the products currently on the market, which reduces the incentive to engage in product development. This means that the Food-Based Dietary Guidelines do not satisfy the guideline for sodium intake from the Guidelines for a healthy diet 2006. Possibilities for tightening the threshold values for sodium should be investigated.
 - *Non-basic foods*
The Netherlands Nutrition Centre divides non-basic foods among categories A, B and C, based on an evaluation of the number of calories per portion and the levels of saturated fat, trans fat and sodium. The committee argues that two additional conditions should be stipulated for placing non-basic foods in category A:
 - just like the basic foods, non-basic foods in category A should also have a positive nutritional value, and
 - products that contain specific substances with a proven adverse effect which fall outside the assessment criteria for these products ought not to be eligible for inclusion in category A or B.Products that do not satisfy these conditions and are nevertheless placed in category A may undermine the credibility of the Food-Based Dietary Guidelines. When the Food-Based Dietary Guidelines are revised, the committee recommends that consideration should be given to whether these conditions can be formulated in a useful and meaningful manner.
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