

Carbohydrates in dietary guidelines

In 2015, the Health Council of the Netherlands published new dietary guidelines. In 2020, new dietary recommendations were published by the Dutch Diabetes Federation for people with (or at a high risk of developing) diabetes. This fact sheet elaborates on the recommendations for carbohydrate intake in these dietary guidelines. We also provide a summary of the dietary guidelines specifically targeting sugars. In 2015, the World Health Organization (WHO), for example, published guidelines for the consumption of free sugars and in 2022, the European Food Safety Authority (EFSA) published a scientific opinion on the tolerable upper intake level for dietary sugars.

The Health Council of the Netherlands

Dutch dietary guidelines 2015

The Dutch dietary guidelines 2015 replaced the guidelines from 2006 and are intended for the general population. The Health Council of the Netherlands formulated the guidelines for a healthy diet based on scientific research on the effect of diet on the ten most common chronic diseases (including cardiovascular disease, type 2 diabetes and cancer)¹.

Foods vs nutrients

For the first time, the Health Council of the Netherlands formulated its guidelines entirely based on foods, whereas this was mostly in terms of nutrients in 2006. As a result, the number of foods for which recommendations are made is significantly expanded. The advice also includes recommendations on dietary patterns. This makes them easier for consumers to understand. In 2006, the Health Council of the Netherlands recommended obtaining at least 40% of your energy intake (en%) from carbohydrates, with an acceptable range of 40-70 en%. The current dietary guidelines do not include recommended amounts or energy percentages for macronutrients in the diet.

General recommendations:

Follow a dietary pattern that involves eating more plant-based and less animal-based food, as recommended in the guidelines:

- Eat at least 200 grams of vegetables and at least 200 grams of fruit daily
- Eat at least 90 grams of brown bread, wholemeal bread or other whole grain products daily
- Eat legumes weekly
- Eat at least 15 grams of unsalted nuts daily
- Take a few portions of dairy products daily, including milk or yogurt
- Eat one serving of fish weekly, preferably oily fish
- Drink three cups of tea daily
- Replace refined cereal products by whole-grain products
- Replace butter, hard margarines, and cooking fats by soft margarines, liquid cooking fats and vegetable oils
- Replace unfiltered coffee by filtered coffee
- Limit the consumption of red meat, particularly processed meat
- Minimise the consumption of sugar-containing beverages
- Don't drink alcohol or no more than one glass daily
- Limit salt intake to 6 grams daily
- Nutrient supplements are not needed, except for specific groups for which supplement applies

In 2022, the permanent Committee on Nutrition at the Health Council of the Netherlands prepared an update on the dietary guidelines from 2015. In the upcoming version, the committee will also focus on the sustainability of food products and on factors that influence purchasing and eating behaviours.

How are the dietary guidelines formulated?

The dietary guidelines are formulated by a group of independent nutritional and other scientists who review and analyse the latest scientific studies on food and health and base the recommendations on their findings. In the Netherlands, the dietary guidelines form the basis of government policy and nutritional education. Cosun Nutrition Center also bases its communications on these guidelines.

Dietary fibre guidelines

The Health Council of the Netherlands recommends that adults consume 14 grams of fibre per 1000 kcal⁴. This translates into an average energy intake of 30 to 40 grams per day. Based on average intake data from the last survey, most adults in the Netherlands fail to meet this recommendation (20.7 g/d)². However, around 10% of adults do meet this guideline⁴.

Carbohydrate recommendations

Eat at least 90 grams of brown bread, wholemeal bread or other whole grain products daily. Replace refined cereal products by whole-grain products.

The Health Council of the Netherlands recommends eating at least 90 grams of brown bread, wholemeal bread or other whole grain products daily. In the Netherlands, 47% of adults meet this recommendation². Around half of bread and grain product consumption consists of wheat bread or whole grain products.

It is important to consume whole grain products because they contain important nutrients, such as carbohydrates, fibre, iron and B vitamins. Scientific research also shows that eating a sufficient amount of whole grain products reduces the risk of certain diseases, such as cardiovascular disease and type 2 diabetes³.

Sugar recommendations

Minimise the consumption of sugar-containing beverages.

Sugar-containing beverages include not only drinks with added sugars, but also fruit juices because they have a comparable sugar content. Beverages with added sugars include cold drinks to which sucrose (table sugar), fructose or glucose has been added. Examples are fruit drinks, fruit nectars, soft drinks, ice tea, vitamin water and sports drinks to which sugars have been added. According to the Health Council of the Netherlands, good alternatives are drinks without sugars, such as tea, filtered coffee and water. The Health Council of the Netherlands states that consuming one to two glasses of sugar-containing beverages per day leads to an increased risk of type 2 diabetes. In fact, cohort studies have shown an association between the consumption of drinks with added sugars and a higher risk of type 2 diabetes. Intervention studies show that this association is probably related to overweight: the daily consumption of around one litre of sugar-containing beverages increases the body weight of adults by around one kilogram in the short term (one month)⁵.

Dietary guidelines for people with type 2 diabetes

In November 2021, the Health Council of the Netherlands published the version of the dietary guidelines for people with type 2 diabetes. In these recommendations, the Committee on Nutrition states that it sees no reason for people with type 2 diabetes to deviate from the Dutch dietary guidelines⁶, as these guidelines largely correspond with the Dutch Diabetes Federation (NDF) guidelines. For example, both the regular dietary guidelines and guidelines for people with type 2 diabetes encourage the consumption of whole grain products, legumes, fruits and vegetables and limiting consumption of sugar-containing beverages.

World Cancer Research Fund

The World Cancer Research Fund has prepared different recommendations to reduce the risk of developing cancer. These recommendations for a healthy diet are⁷:

- Eat a lot of whole grain products, fruits, vegetables and beans.
- Limit consumption of fast foods and other processed foods high in fat, starches or sugar. Limiting these products helps to reduce calorie intake and maintain a healthy weight.
- Limit consumption of red and processed meats.
- Limit sugar sweetened drinks.
- Limit alcohol consumption.
- Do not use dietary supplements for cancer prevention.

Dutch Diabetes Federation (NDF)

NDF dietary guideline diabetes 2020

The dietary guidelines published by the NDF are intended as a tool to provide dietary advice to people at increased risk of developing type 2 diabetes, people diagnosed with type 1 or 2 diabetes or women with gestational diabetes⁸. The guidelines are evidence-based and focus on personalised healthcare. The NDF updates its dietary guidelines every five years. They first published scientifically-based dietary guidelines in 2006. Revised versions were then published in 2010 and 2015. At the end of 2020, the most recent version of the dietary guidelines was published⁸.

Changes since 2015

The guidelines from 2015 were the first to focus less on individual foods and nutrients and more on overall dietary patterns. The latest version from 2020 continues this focus. In these guidelines, the role of dietary patterns and treatment of obesity have been thoroughly revised and expanded with practical recommendations. The new guidelines also include a description of the Combined Lifestyle Intervention (abbreviated in Dutch as GLI) and devote attention to low-carbohydrate dietary patterns.

Diabetes prevention

The NDF recommends that people with a high risk of developing type 2 diabetes choose high-quality carbohydrate sources, such as whole grain products, legumes, fruits and vegetables. The consumption of refined carbohydrate sources, such as white bread, bread products with white flour, pastries and biscuits, low-fibre breakfast cereals and white rice and pasta, should be limited, as well as the intake of sugar-containing beverages. In the NDF guidelines, the following dietary patterns are given as examples because they meet the above criteria: the Dutch Wheel of Five, low-carbohydrate (no more than 40 en%), low-fat (less than 30 en%), Mediterranean, DASH (*Dietary Approaches to Stop Hypertension*) and vegetarian/vegan. It is also important to take into account personal preferences, cultural dietary preferences and the right amount of energy⁸.

Diabetes treatment

Just like for people with a high risk of developing type 2 diabetes, different dietary patterns, such as low-carbohydrate, low-fat, Mediterranean, DASH and vegetarian, are beneficial to those with type 2 diabetes. For people with type 2 diabetes (of which over 80% are overweight), the emphasis in the recommendations is primarily on achieving and maintaining a healthy weight, sufficient physical activity and reducing the risk of cardiovascular complications. The DASH and Mediterranean diets are the most highly recommended. With a low-carbohydrate, low-fat and vegetarian/vegan diet, it is important to devote extra attention to consuming enough fibre, essential fatty acids, vitamins and minerals. For women with gestational diabetes, it is important to regulate the blood glucose level, but the best dietary intervention for this is not clear⁸.

Carbohydrate recommendations

People with diabetes can eat sugars^{8,9}. **Table 1** contains the recommendations and practical advice of the NDF regarding carbohydrates and sugars.

Table 1. Overview of recommendations and practical advice from the NDF regarding carbohydrates and sugars.

Nutrient	Recommendation/Practical advice
Carbohydrates	<p>There is no carbohydrate energy percentage that is favourable for all diabetics. Choose unrefined carbohydrate sources such as:</p> <ul style="list-style-type: none"> • Whole grain products • Legumes • Vegetables • Fruit <p>Limit the consumption of refined carbohydrate sources, such as:</p> <ul style="list-style-type: none"> • White bread and bread products with white flour • Pastry and biscuits • Low-fibre breakfast cereals (such as cornflakes and sugar-coated rice) • White rice and pasta <p>Limit the consumption of sugar-containing beverages</p>
Free sugars	Limit the intake of free sugars.
Fructose	<p>Fructose can be used as a substitute for sucrose or glucose, but also provides energy and affects the blood glucose level.</p> <p>Limit the consumption of drinks containing fructose as a sweetener.</p>
Fibre	<p>Fibre has a positive effect on health. The consumption of sufficient fibre is associated with a lower risk of developing type 2 diabetes and cardiovascular disease and also has been shown to stabilise the blood glucose level in diabetics.</p> <p>Due to the overall health benefits of fibre, consuming a sufficient amount of dietary fibre is recommended (30-40 grams per day).</p>
Glycaemic index	Replacing high-glycaemic products with low-glycaemic products helps to improve glucose regulation.

Specific dietary guidelines for sugars

Dietary guidelines specifically for sugars have also been prepared. In 2015, for example, the World Health Organization (WHO) published guidelines for the consumption of free sugars and in 2022, the European Food Safety Authority (EFSA) published a scientific opinion on the tolerable upper intake level for dietary sugars. These two guidelines are described briefly here.

European Food Safety Authority (EFSA)

Tolerable upper intake level for dietary sugars

The European Food Safety Authority (EFSA) is an agency of the European Union that provides independent scientific recommendations related to food safety. In June 2016, the EFSA received a request from five European countries (Denmark, Finland, Iceland, Norway and

Sweden) to issue recommendations on the maximum tolerable daily intake level of (total/added/free) sugars, whereby it is unlikely that adverse health effects will occur. The goal of these recommendations is to support European public health organisations in preparing guidelines for sugar intake in their country based on scientific facts. In early 2022, the EFSA published a scientific opinion on the tolerable upper intake level for dietary sugars¹⁰. For this report, the EFSA analysed the results of a large number of studies.

EFSA examined whether there was a positive and causal link between the different types of sugars (e.g. total, added and free sugars) and metabolic disorders such as obesity and diabetes. Based on these analyses, EFSA concluded that it is not possible to determine a maximum tolerable intake level of sugars. Nevertheless, in the context of adequate nutrition, the EFSA experts recommended that the amount of free and added sugars in the diet should be as low as possible. But the EFSA experts have also indicated that there are too many uncertainties about the relationship between the intake of free and added sugars and adverse health effects with an intake of less than 10 en% (which means less than 10% of all calories originating from free or added sugars): *“The Panel notes, however, that at levels of added or free sugars intake below 10 E% uncertainty is high regarding the shape and direction of the relationships between added and free sugars intake and the risk of metabolic diseases.”*

Free sugars

Free sugars are sugars (monosaccharides and disaccharides) that are added to goods by the consumer, manufacturer or cook, in addition to naturally present sugars in honey, syrups, fruit juices and fruit concentrates. Naturally present sugars in fruits, vegetables and dairy products do not fall into this category.

World Health Organization

Guideline: Sugars intake for adults and children

In 2015, the World Health Organization (WHO) published the *Guideline: sugars intake for adults and children*¹¹. This guideline replaced the previous guideline from 2003. In 2003, the dietary advice was to reduce the intake of free sugars to less than 10 en% (see text box for the definition of free sugars). For the 2015 report, WHO focused on the prevention and control of unhealthy weight gain and dental caries. In this report WHO recommends: 1) a reduced intake of free sugars throughout the life course 2) reducing the intake of free sugars for both adults and children to less than 10% of total energy intake 3) a further reduction of the intake of free sugars to below 5% of total energy intake (conditional recommendation). A conditional recommendation is made when there is less certainty ‘about the balance between the benefits and harms or disadvantages of implementing a recommendation’¹².

The above quantitative recommendations are based on the relationship between free sugars and dental caries and not the relationship between free sugars and overweight. The WHO researchers did find a relationship between a higher intake of free sugars and a higher body weight. However, this relationship disappeared with isoenergetic exchange of free sugars with other carbohydrates. The relationship between a higher intake of free sugars and an increased body weight is therefore caused by a higher calorie intake. In other words: free sugars have no specific fattening effect¹¹.

The WHO researchers indicate that the recommendation to reduce the intake to less than 10 en% from free sugars is based on scientific evidence of ‘moderate quality’. The recommendation of a further reduction of the intake of free sugars to below 5 en% is based on scientific evidence of ‘very low quality’.

Conclusion

The dietary guidelines established by the Health Council of the Netherlands are considered the most important recommendations for the Netherlands. The nutrition policy and nutritional education in our country are based on these guidelines. Cosun Nutrition Center also bases its communications on the Dutch dietary guidelines.

In the dietary guidelines for diabetics, the Dutch Diabetes Federation recommends that people with type 2 diabetes or with a high risk of developing type 2 diabetes consume unrefined carbohydrate sources, such as whole grain products, legumes, fruits and vegetables.

The NDF also recommends limiting the intake of free sugars, sugar-containing beverages and refined carbohydrate sources, such as white bread and white rice. Due to the overall health benefits of fibre, the NDF recommends consuming a sufficient amount of dietary fibre (30-40 grams per day).

Regarding the guidelines for sugars, EFSA indicates that it is not possible to determine a maximum tolerable intake level of sugars. Nevertheless, in the context of adequate nutrition, the EFSA experts recommend reducing the amount of free and added sugars in the diet as much as possible. However, the EFSA experts also indicate that there are too many uncertainties about the relationship between the intake of free and added sugars and adverse health effects with an intake of less than 10 en%.

The World Health Organization recommends reducing the intake of free sugars to less than 10en%. This quantitative recommendation is solely based on the prevention of dental caries and not overweight. The researchers indicated that the quality of the evidence for the recommendation of <10 en% was 'moderate' and of 'very low quality' for the conditional recommendation of <5 en%.

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