



# Type 2 Diabetes

## Dietary Guidelines

### Daily diet

Dietary guidelines for people who are diagnosed with type 2 diabetes are much the same as for anybody else: a healthy, balanced diet made up of suitable portion sizes. Preference is given to unprocessed, nutritional foods such as vegetables, fruits, berries, nuts, seeds, whole grain products, beans, lentils, vegetable oils, pure dairy products, fish and meats. Water should at all times be the drink of choice. On the Directorate of Health's website one can find lots of useful dietary information.

When preparing meals, it's good to keep in mind that at least half of the plate should be made up of vegetables and/or fruit, a quarter should be whole grain bread, potatoes, barley, brown rice or other whole grain products, and the final quarter should be high-protein foods such as fish, meat, eggs or beans.

Eat lots of vegetables and fruits

Choose food that is high in protein

Water should be the drink of choice

Choose whole grain products



## **Quality and quantity of carbohydrates**

Food gives energy through carbohydrates, protein and fat but it also contains vitamins, minerals and other essential nutrients. Carbohydrates directly affect the blood sugar because they turn into sugar (glucose) in the dietary tract. The sugar is absorbed into the bloodstream and distributed to all of the body's tissues.

Different kinds of carbohydrates affect blood sugar in different ways. Because of this the recommended amount of dietary carbohydrate can vary from person to person. Most people only need to focus on the quality of the carbohydrates in their food. Fiber is a good example of a beneficial carbohydrate as a fiber-rich diet can help regulate the blood sugar. Additionally, fiber helps to control hunger effectively and can reduce cholesterol levels in the blood. A high-fiber diet consists of food such as beans, lentils, vegetables, fruits, seeds, nuts/almonds and whole grain products (e.g. rye, barley, whole grain wheat, oats and whole grain spelt flour). However, processed foods that contain a lot of sugar or other processed carbohydrates (e.g. white flour) should be reduced. These products tend to be low in fiber, provide little nutrition and require less digestion, which means they raise the blood sugar levels rapidly. Examples of such products include soft drinks, sweets, cakes, snacks and fast food.

If regulating the quality of the carbohydrates proves insufficient for reaching blood sugar goals, it might be advisable to also limit the quantity of carbohydrates, either extensively or to some degree (e.g. through a moderate reduction in carbs or a low-carb diet). In the case of a low-carb diet, it's important to consult with a health worker beforehand as such diets are not suitable for everyone; e.g. individuals with reduced kidney function, pregnant women, women who are breastfeeding or individuals who suffer from an eating disorder or have a history of such disorders. To ensure that the diet in question fulfills all nutritional needs, a nutritionist should ideally be involved in preparing and monitoring the treatment.

## **Sugars and sweeteners**

Most of the added sugar in Icelanders' diet comes from soda and soft drinks, sweets, cakes, biscuits and ice cream. These products generally provide very little of essential nutrients but have the ability to rapidly raise blood sugar levels, especially in the case of beverages. Sweets, cakes, biscuits and ice cream should therefore only be enjoyed in strict moderation, and sugary sodas and soft drinks should be avoided all together.

There is little evidence that sweeteners such as stevia, aspartame, acesulfame k and xylitol affect blood sugar levels; they have not been found to be harmful as long as they are consumed within limits. Even so, sweeteners should only be consumed in moderation.

## Vegetables

Along with other essential nutrients, vegetables are rich in fiber, which can help regulate blood sugar levels. Vegetables are also low in calories and can thus also help with weight management. It's recommended to eat at least 3 portions (200-300 g) of vegetables daily. Ideally, vegetables should play a part in all of the day's meals. Potatoes are not included in this recommended daily intake but can still be a part of a balanced diet.

## Fruits and berries

Fruits and berries contain fructose, which can raise blood sugar levels if consumed in high volumes, but they also contain lots of essential nutrients. The fiber in fruits can help regulate the blood sugar, so fruits should be eaten daily. However, fruit juices and shakes of all kinds (e.g. smoothies, fruit boosts etc.) contain high amounts of fructose that is directly digestible and rapidly raises blood sugar levels. Such drinks should therefore be avoided all together and the fruits and berries enjoyed whole instead. Keep in mind that dried fruits contain as much fructose as fresh fruits, so it's important to closely moderate portion sizes.

Overall, it is recommended to eat no more than one portion of fruit per meal (100-150 g) and no more than on average three fruit portions per day (300-400 g). If carbohydrates must be reduced, this average goes down to a maximum of two portions of fruit per day (200-300 g). For a low-carb diet, however, fruit intake should be a maximum of half to one portion per day (50-150 g).

## Cereal products

Whole grain bread and other whole grain cereal products are recommended. Such products are often labelled with the Keyhole or the whole grain label.



In most cases, whole grain and minimally treated cereal products have less of an effect on blood sugar levels than processed products. Whole grains such as rye, barley, whole grain spelt flour and oats are ideal. Barley and brown rice can also be served as a side dish.

If carbohydrates must be reduced beyond what can be achieved by limiting the intake of sodas and soft drinks, sweets and processed carbohydrates, it might also be a necessary to limit the amount of pasta, noodles, rice and similar foodstuffs, even bread and potatoes as well. An effective approach might be to limit consumption to a single slice of whole grain bread at a time but choosing a filling topping instead. When it comes to a low-carb diet, the majority of cereal products should be avoided but there is still room for a single portion of oatmeal or 1-2 slices of whole grain bread per day (or some equivalent amount).

## **Milk and dairy products**

Milk and dairy products contain many important nutrients; e.g. protein, calcium, iodine and other minerals and trace elements. Along with most dairy products, milk also contains lactose, which can affect blood sugar levels. In its liquid form, lactose can rapidly raise blood sugar levels, so drinking lots of milk or dairy products is not recommended. It's better to consume denser dairy products such as skyr, yogurt and cheese and only use milk in food preparation. Milk can also be added to porridge and similar meals. A daily dose of two portions of dairy (500 ml) should be sufficient and one portion of dairy equals 25 g of cheese. Choosing plain dairy products is recommended, or at least sugar free products (which use sweeteners). For many people, low-fat products are also the best choice. Low-fat dairy products are less of a concern for individuals following a low-carb diet.

## **Meat, fish, eggs and beans**

Along with dairy products, meat, fish, eggs and beans are the major source of protein in a daily diet. Overall, it's best to choose unprocessed, lean meats. The Directorate of Health recommends limiting intake of red meat (i.e. beef, lamb and pork) to 500 g/week or less. This is especially the case when it comes to processed meat products. Processed meat products are generally made from red meat that has been smoked, salted or preserved using nitrate or nitrite; e.g. salami, pepperoni, bacon, hot dogs, smoked sausage, sausage meat, smoked lamb or ham. Fish should be consumed two to three times a week as a main course. Ideally, one of those meals should be a fatty fish such as salmon, trout, halibut or mackerel. Poultry (white meat), egg, bean or vegetable dishes can be used for other meals of the week or as toppings. Recommendations for meat and fish also apply for individuals on a low-carb diet. However, lean meats are less of a concern for these individuals.

## **Fat**

For most diets, swapping solid fat for liquid fat is recommended. This helps to reduce the chance of cardiovascular diseases. Liquid fat can primarily be found in fatty fish and in plant foods such as vegetable oils (e.g. olive oil or rapeseed oil), nuts, seeds and avocados. Hard fat is found in deep-fried food, factory made cakes and biscuits, sweet pastries, snacks and chips, processed meat products, high-fat meats and high-fat dairy products (e.g. butter and margarine). For a low-carb diet, the reduction in carbohydrates means that fat intake must be increased.

## Salt

Consuming lots of salt can raise blood pressure and cause edema in the body. Reducing salt can therefore have beneficial effects on health. Most salt in food originates in processed foods; e.g. processed meat products, instant soups and sauces, ready meals and fast foods. Many spice mixes and stock cubes also contain a lot of salt. Regardless of the type of salt, all salt causes a rise in blood pressure. Low-carb diets can cause a loss of liquid and salt in the body, so it's not recommended to reduce salt excessively, especially early on.














## Vitamin D

Vitamin D is rarely found in food and so it's necessary to consume it separately as a supplement, either in the form of cod liver oil (lýsi) or vitamin D tablets. The recommended daily dose of vitamin D is 15 µg/day (600 IU) for adults and 20 µg/day (800 IU) for seniors. It can be harmful to regularly take vitamin D in excess of more than 1000 µg/day (4000 IU). Such doses should not be taken except under doctor's instruction.

## Meals per day

The daily recommended nutritional intake for diabetes includes breakfast, lunch and dinner with one or two snacks between meals spread out across the day. However, this can vary from person to person. Skipping meals in order to lower blood sugar levels is however not recommended. When a person is taking medication that affects the level of insulin in the blood (e.g. insulin), it's especially important to maintain a regular meal schedule in order to keep blood sugar levels balanced. It's also important to consider portion sizes, to eat slowly and savor the food, and to closely monitor hunger and satiety.

# DIETARY GUIDELINES FOR CARBOHYDRATES IN FOOD

<b>General dietary guidelines</b> (45-60% energy from carbs)	<b>Reduced carbohydrates</b> (30-40% energy from carbs)	<b>Low-carb diet</b> (10-20% energy from carbs)
 	Limit additional sugars and sweets	
Avoid sugary sodas and soft drinks, fruit juices and shakes, drinking milk and drinks made from dairy products		
		
Lots of vegetables		
		Fish two to three times a week
 Plain milk products without added sugar	High-fat milk products without added sugar 	
Moderate amounts of lean meat, limit processed meat products	Lean meat less of a concern	
Softer and healthier fats; e.g. fatty fish, cod liver oil, vegetable oils, nuts, seeds and avocados	Increased fat, both liquid and solid	
Reduce salt		
 Whole grain bread and other whole grain cereal products	Moderate amounts of pasta, noodles and rice, possibly bread and potatoes as well	Avoid most cereal products
Two to three portions of fruit per day 	A maximum of two portions of fruit per day 	Half to one portion of fruits per day 