FOR PATIENTS

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STADAPHARM

Nutritional guide for ***kidney disease***

Information, tips and ideas for patients with kidney disease and their families



Caring for People's Health **www.stadapharm.de**

Introduction

Dear Reader,

The kidneys are vital organs. Chronic kidney disease is a long-term condition that affects patients in many different ways in their day-to-day lives. For those affected and their families, this presents new challenges that can take some time to get used to. We would like to help you with this.

There are many things you can do yourself, and the most important is to eat a balanced diet. This helps to slow down the progression of the disease. A "kidney-friendly" diet does not mean sacrificing enjoyment. With the right foods and a few simple rules, you can prepare delicious meals.

This nutritional guide contains practical tips on diet, as well as some ideas for meals that are good for your kidneys and still a pleasure to eat.

We hope you enjoy reading, cooking and eating.

All the best from your STADAPHARM team

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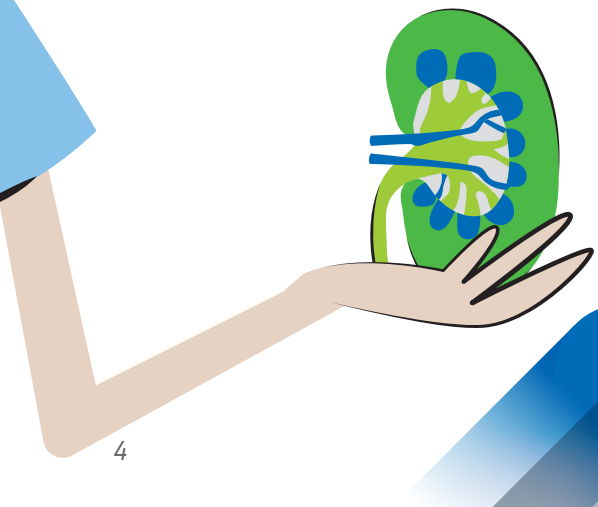
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Small but mighty

The structure of the kidneys

A kidney is bean-shaped, about the size of a fist, and weighs between 120 and 200 grams. We have two kidneys – they are located on either side of the spine, roughly level with the lower ribs. Although they are small, they do remarkable work: around a fifth of the body's total blood volume flows through them at all times.

Each kidney consists of around one million small functional structures known as renal corpuscles or nephrons. Each nephron contains a renal corpuscle and a tubule. The renal corpuscle is also known as the glomerulus, and it looks like a cluster of tiny blood vessels. The blood is forced through this cluster of vessels. The fluid and small components of the blood are then filtered by a structure known as Bowman's capsule. Large components, such as proteins, are transported back into the bloodstream. The fluid that reaches the other side of the filter is called primary urine and undergoes further processing in the tubule. Essential substances for the body, such as sugars and salts, are absorbed back into the bloodstream, along with 99 per cent of the filtered water. Substances that the body does not need or that are harmful to it are eventually excreted as waste products in the urine.



An organ for (almost) every eventuality

Functions of the kidneys

The kidney performs many vital functions. Here are a few examples.

Cleaning the blood: Our kidneys work tirelessly behind the scenes, day in, day out. Around 1,800 litres of blood are pumped through them every day. As this happens, the kidneys clean the blood of harmful waste products produced during normal metabolism. One example is urea, a breakdown product of protein. These substances are excreted in the urine. If this process does not function properly, toxins build up in the body, which can have dangerous consequences for your health.

Filter function: The renal corpuscles act as a filter: they only let through water and waste products that the body wants to eliminate. Important components such as proteins and blood cells, on the other hand, remain in the body. However, if this filter is damaged, proteins and blood cells can also end up in the urine. This is a warning sign of possible kidney disease and should not be ignored.

Regulating water and salt balance: The kidneys also help to keep the body's fluid balance in check. When there is excess fluid, they excrete more minerals such as sodium, potassium and calcium along with the fluid. If fluid levels are low, they retain both minerals and fluid.

Regulation of blood pressure: The kidneys also help to regulate blood pressure. If the pressure is too high, they release more water and salts, which causes the pressure to drop. If it is too low, they retain both, causing blood pressure to rise. In addition, the kidneys produce an enzyme called renin. This hormone plays a key role in regulating blood pressure. The kidneys are also involved in blood formation. They produce the hormone erythropoietin, which stimulates the production of red blood cells in the bone marrow. A deficiency of this hormone can lead to anaemia (low red blood cells).

Kidney disease –
What does this mean?

If you have chronic kidney disease, this means that the kidneys are no longer working properly. They are unable to remove metabolic waste products effectively. These substances, some of which are toxic, build up in the blood. Doctors refer to this as uraemia, a form of gradual poisoning.

As the disease progresses further, more kidney functions may be affected. At a very advanced stage, the kidneys are often no longer able to excrete excess fluid. The body retains fluid. This swelling, known as oedema, usually occurs in the legs or face. It also puts additional strain on the cardiovascular system. Important: oedema can also be caused by heart disease.

The most common causes of chronic kidney disease are diabetes and high blood pressure. Other causes include inflammation of the renal corpuscles (glomerulonephritis) or of the kidney tissue. Thanks to modern diagnostic methods, genetic kidney diseases are now being diagnosed more frequently. Other possible causes of kidney disease include arteriosclerosis, urinary obstruction, or frequent urinary tract infections. Many of these conditions are chronic, progress slowly and are irreversible.

The kidney is a silent organ: even when its function is severely impaired, symptoms often do not appear for a long time. When symptoms do occur, they are usually non-specific – such as high blood pressure, anaemia, acidosis, itching, loss of appetite, difficulty concentrating or general weakness. They occur because metabolic waste products build up in the body.

However, it doesn't have to be this way. If you take warning signs seriously, have regular check-ups with a doctor, and follow a balanced, kidney-friendly diet, you can significantly slow down the progression of the disease.

Good health
starts with your diet

The treatment of kidney disease depends on what has caused it and how much damage has already been done to the kidneys. Ideally, the doctor should be able to treat the cause directly; in other words, tackle the problem at its root. For example, high blood pressure and diabetes can usually be treated effectively with the right medication. In many cases, inflammation of the renal corpuscles can be treated with medication that specifically suppresses the immune system. In cases of urinary retention or problems with the flow of urine, you will often need to see a urologist.

The primary aim of any treatment is to delay complete kidney failure for as long as possible. You can also play a big part in this:

- *Take your medication regularly and exactly as prescribed.*
- *Work closely with your GP and a nephrologist, i.e. a kidney specialist.*
- *Pay attention to your diet – it should be easy on the kidneys, but at the same time provide all the essential nutrients.*
- *If you are unsure about what you can or should eat, professional dietary advice can help.*



Fluids – ***Getting the right amount***



Many people believe that drinking plenty of fluids is better for the kidneys. However, this is a misconception. Healthy kidneys do not require any additional support in the form of large amounts of water. Even if you have kidney disease, it is enough to make sure that you drink a normal amount of fluids. The German Nutrition Society recommends a daily fluid intake of around 1.5 litres, which should be consumed throughout the day. This is usually enough to meet your fluid requirements and prevent thirst. However, there are some exceptions: people who are prone to kidney stones or frequently suffer from urinary tract infections often benefit from drinking more fluids. What is right for you personally depends on your health and the condition of your kidneys. It is best to talk to your doctor or a dietitian to have your actual requirements assessed.

Optimise your ***protein intake***



Protein is an essential nutrient. Our bodies need it to build muscle and repair tissue. However, if you have kidney disease, you should limit your protein intake. If the body receives more protein than it needs, it uses this excess protein to produce energy. This process generates waste products that must be excreted via the kidneys. If the kidneys are already functioning at a reduced capacity, this extra workload can lead to them becoming overburdened. Therefore, experts recommend limiting protein intake to the necessary amount – no more, but no less either. For most adults, 0.8 grams of protein per kilogram of body weight per day is sufficient to maintain muscle mass. People over the

age of 65 years or those with certain medical conditions should consume slightly more, around 1 gram per kilogram of body weight, to maintain muscle mass. However, you should always discuss this amount with your doctor.

Would you like to know how much protein is in a glass of milk, a portion of meator a slice of bread? This overview of common foods and their protein content can help you have a better understanding of your own diet.

	Protein
1 slice of bread (50 g)	4 grams
1 slice of cheese (30 g)	8 grams
1 slice of cold cut (25 g)	4 grams
1 portion of meat, fish or poultry (150 g)	30 grams
1 egg (60 g)	8 grams
1 pot of yoghurt (150 g) (milk, buttermilk, kefir and soured milk are similar)	6 grams
1 pot of quark (150 g) (Skyr or cottage cheese are similar)	18 grams
1 portion of fruit (150 g)	1 gram
1 portion of vegetables, mushrooms (150 g)	3 grams
1 portion of pulses (150 g)	14 grams
Potato (200 g)	4 grams
Pasta, cooked (200 g)	7 grams
Rice, cooked (200 g)	4 grams
1 handful of nuts (30 g)	5 grams

Cut down
on salt



Whether or not you have kidney disease, most people eat too much salt. The German Nutrition Society (DGE) recommends a maximum intake of 6 grams of table salt per day. In reality, average daily intake in Germany is significantly higher. Salt, i.e. table salt or sodium chloride, is the main source of sodium. This mineral is needed by the body, but only in small amounts. One gram of sodium is equivalent to 2.5 grams of table salt.
We get around 80 per cent of our daily salt intake from everyday food, often without even realising it. The following are particularly high in salt:

- *Bread and rolls*
- *Cheese, sausage and ham*
- *Ready-made sauces and condiments*
- *Ready meals such as frozen pizza*
- *Snacks such as crisps*

However, salt is also found in effervescent tablets, energy drinks and protein shakes. What many people don't know is that salt – or rather the sodium it contains – binds water. It makes you thirsty, encourages you to drink, and leads to increased fluid in the body. This in turn results in higher body weight and an increase in blood pressure. For people with kidney disease, this can place an additional strain on the body. Therefore, reducing your salt intake can help to regulate your fluid balance more effectively. It is a simple but effective step you can take for your health.



STADAPHARM tips
for reducing salt intake

Use salt sparingly and avoid stock cubes, ready-made stocks and sauces.

When buying processed foods, check the list of ingredients and avoid products containing more than 250 mg of sodium or 625 mg of salt per portion.

For tinned foods, drain off the brine or liquid.

Use fresh herbs, lemon or lime juice instead of salt.

Choose thinner or smaller slices of cold cuts or cheese to automatically reduce your intake of salt and protein.

Why not try porridge for breakfast instead of bread? You can find a delicious recipe further on in this booklet. This breakfast is high in fibre and contains no salt – a great way to start the day.

Potassium – *Important, but only in moderation*



Potassium is an essential mineral. It keeps the nerves and muscles functioning properly – especially the heart. Our body needs potassium, but only in moderation. Too much or too little potassium can be dangerous and lead to muscle weakness or heart rhythm disorders and, in the worst case, heart failure. Healthy kidneys help maintain a balanced potassium level. If the kidneys are failing, this process no longer works, and potassium builds up in the body. Certain blood pressure-lowering medicines can also raise potassium levels, as they slow down its excretion via the kidneys.

How much potassium do we consume?

Potassium is found in almost all foods. However, what matters is not necessarily the value per 100 grams, but the portion that is actually eaten. Bananas, potatoes, rocket and turkey breast all contain a similar amount of potassium per 100 grams. A medium-sized potato and a small banana weigh about 100 grams. A portion of rocket, on the other hand, weighs only about 30 g, whereas a portion of turkey breast weighs between 125 and 150 g. And what about parsley? Although it contains twice as much potassium as the other foods listed here, it is only consumed in very small quantities. Together, portion size and potassium content determine how much potassium a meal provides. There is another point to consider: the body does not absorb all potassium to the same extent.

Not all potassium is the same

It is important to consider where the potassium comes from. Only between 50 and 60 per cent of the potassium found in high-fibre plant-based foods is absorbed. In contrast, between 70 and 90 per cent of the potassium from animal-based foods such as meat, cheese or milk enters the bloodstream. Crucially, over 90 per cent of the potassium from additives in ready meals or processed food is absorbed. Anyone who needs to keep an eye on their

potassium levels should eat a high-fibre diet and avoid processed foods with added potassium wherever possible.

Identifying additives that contain potassium

Pay particular attention to: **E202 potassium sorbate, E249 potassium nitrite, E252 potassium nitrate, E340 potassium phosphate, E450 diphosphate, E501 potassium triphosphate, E508 potassium chloride, E515 potassium sulphate and E525 potassium hydroxide.** These substances are often found in meat and sausage products, baked goods, ready-made soups, cheese products, effervescent tablets and sports drinks. Some also contain phosphate – another reason to avoid them if your levels are high. Making informed purchasing decisions protects not only your kidneys but also your overall health.



STADAPHARM tips

Choose fresh fruit and vegetables, pulses and wholegrain products. By doing this, you will be getting plenty of fibre, but not much salt or protein.

If your potassium levels are high, it is best to eat only small portions of foods that are particularly high in potassium, such as tomatoes, potatoes, avocados, bananas or fruit juices, and to spread them out across the day.

Put a note listing the additives in your wallet – or save the list on your mobile phone. This way, you will always have the information handy.

A healthy gut
protects the kidneys

You can have a significant impact on the development of kidney disease by controlling your diet. To understand this, it is worth taking a look at where it all begins: in the gut. Billions of micro-organisms live in our gut – mainly bacteria. These "microbiota" help us break down food and make nutrients available to the body. At the same time, they live off what we eat.

Every person carries hundreds of different types of bacteria. Some of these are useful because they produce substances that are beneficial to our health. Others, however, produce toxins that are normally excreted via the kidneys. However, if the kidneys are damaged, these substances build up in the body. They are thought to accelerate calcification of the arteries and increase the risk of cardiovascular disease.

Our diet directly influences which types of bacteria thrive in our gut. Bacteria react very quickly: if they have enough food, they can double in number within 20 to 60 minutes. Therefore, our diet has a direct impact on the composition of our gut microbiota. Dietary fibre – plant-based carbohydrates that the human body cannot digest itself – plays a key role in this. For many beneficial gut bacteria, fibre is the most important source of food. A diet rich in fibre and plant-based foods promotes the growth of the very bacteria that can break down this fibre. This produces short-chain fatty acids, which keep the gut healthy and make sure that the gut microbiota remains in balance.

Why too much animal protein is harmful to the gut
A diet high in animal protein promotes the growth of other bacteria in the gut, known as proteolytic bacteria. These are specialised in breaking down protein. If they are given too much "food", they multiply rapidly and can crowd

out other, beneficial bacteria. The problem is that these proteolytic bacteria produce uraemic toxins. If these are not excreted in sufficient quantities, they can damage the intestinal barrier, promote inflammation in the body, and have a long-term negative impact on health.

Important: build up slowly!
If you haven't been eating much fibre up to now, you should start gradually. This is because the microbiome needs a little time to adapt. Switching too quickly can lead to increased gas and bloating. This is harmless, but can be unpleasant.

Boosting gut health ***with fibre***

Not all fibre is broken down by gut bacteria. Some of it leaves the body unchanged, which has a positive effect. These types of indigestible fibre increase stool volume and help food move through the gut more quickly. This is beneficial because the less time food spends in the gut, the less time the body has to absorb potassium. With constipation, the opposite is true: the food remains in the gut for longer, and the body absorbs more potassium, which can be particularly problematic for people with kidney disease.

Shop smarter, eat better,
cook more at home

When shopping, make sure you check the nutritional information and the list of ingredients on processed foods and ready meals. This lets you see at a glance how much protein, salt and potassium-containing additives the product contains. It is best to cook with fresh ingredients. That way, you will know exactly what is in your food – and you will be doing your health a favour. What's more, home-cooked food usually just tastes better.



Enjoy your meal: Recipes for ***patients with kidney disease***

Diet plays a particularly important role in kidney disease. Meals should provide enough nutrients and minerals, but they should not place any additional strain on the damaged kidneys. A colourful, well-balanced and varied diet helps to make everyday life enjoyable without missing out on anything. The following pages contain some simple recipes to try. These recipes show that even a kidney-friendly diet can still be varied, fresh and tasty.



Overnight oats
(porridge reloaded…)

Easy to prepare, and a real powerhouse to start your day.
Play around with the ingredients; there are no limits to your creativity.

INGREDIENTS
for one serving

50 g rolled oats (fine or jumbo)
150 ml milk or a plant-based alternative (e.g. oat or almond drink)
1 tsp chia seeds or flaxseed (optional)
1 tsp honey, maple syrup or agave syrup (optional, for sweetness)
1 pinch of cinnamon or vanilla (to taste)
Toppings of your choice: fresh fruit (berries, banana, apple), nuts, nut butter, desiccated coconut, yoghurt, etc.

PREPARATION

Put the oats, milk and seeds (if using) into a glass or bowl. Sweeten and season to taste (e.g. cinnamon, vanilla). Mix everything together well, cover and leave to stand in the fridge overnight (at least 6 hours). The next morning, stir and top with fresh fruit, nuts or yoghurt.

Nutritional values per serving

Calories	335 kcal
Protein	11 g
Fibre	8.5 g
Salt	1 g
Potassium	640 mg

A spicy taste of Asia:

Pasta salad with sesame chicken

You don't need salty soy sauce to cook Asian dishes. A light dressing gives this salad its sweet, sour and spicy flavour. In South-East Asia, noodles symbolise a long life. That's the way it should be!



INGREDIENTS
for two servings

100 g chicken or turkey breast
1 tsp sesame seeds
A little sunflower oil
1 pack of mie noodles
1 cup of white cabbage
2 spring onions
1 chilli
1 tsp sugar
1 tsp sesame oil
1 tbsp rice vinegar or white wine vinegar

PREPARATION

Dice the chicken or turkey and fry it in sunflower oil. Fold in the sesame seeds and set aside. Cook the mie noodles according to the instructions, drain and set aside. For the dressing, mix together the sesame oil, vinegar and sugar. Cut the vegetables into thin strips and mix well with the dressing in a large bowl. Cover and leave to stand for five minutes. Then stir in the noodles. Leave to stand for another five minutes. Divide the salad between the plates. Place the cubes of meat on the bed of salad. Sprinkle some sesame seeds over the top and serve.

Nutritional values per serving
Calories: 440 kcal; Protein: 22 g; Fibre: 5 g; Salt: 0.02 g; Potassium: 500 mg

Vegetable burger
with oats and carrot

INGREDIENTS
for four servings

2 medium-sized carrots, coarsely grated
1 small courgette, grated (squeeze out any excess liquid so it doesn't get too wet)
1 small potato, boiled and mashed* (*You might have a potato left over from the previous day)
50 g rolled oats
1 egg (or 1 tbsp ground flaxseed + 3 tbsp water as a vegan alternative)
1 tbsp rapeseed oil or olive oil
1 tsp paprika (mild)
½ tsp turmeric or curry powder (optional, for colour and flavour)
Pepper to taste (you can leave out the salt or just add a pinch)
Wholemeal rolls or spelt rolls
Lettuce leaves
Slices of tomato
Slices of cucumber
A dollop of natural yoghurt or herb quark

This delicious, hearty classic of American cuisine is gaining more and more fans. Become one of them!

PREPARATION

Mix the carrots, courgette and potato with the oats, egg (or egg substitute) and seasoning. Leave the mixture to stand for about 10 minutes to allow the oats to absorb the liquid. With wet hands, shape the mixture into 4 flat patties. Fry in a pan with a little oil over a medium heat until golden brown on both sides (approx. 4–5 minutes per side). Toast the cut sides of the burger buns in a non-stick frying pan without any oil. Top with lettuce, sliced tomatoes and cucumber, add a dollop of yoghurt or quark, and place the vegetable patty on top.

Nutritional values per serving

Calories	335 kcal
Protein	11 g
Fibre	8.5 g
Salt	1 g
Potassium	640 mg

An earthy, savoury treat:

Beetroot salad with fresh goat's cheese



Beetroot is an excellent source of vitamins and minerals. Served as a salad, beetroot makes a perfect snack or side dish – with fresh goat's cheese it is a delicacy.

INGREDIENTS
for four servings

4 beetroot
1/2 cup of walnuts
1 bunch of basil
100 g fresh goat's cheese

Dressing:
2 tsp fruit or herb vinegar
2 tbsp olive oil
1/2 tsp black pepper
1 pinch of salt

PREPARATION

Preheat the oven to 200°C. Wrap the beetroot in aluminium foil and cook in the oven for 45 minutes. Once cooled, peel and dice. Toast the walnuts briefly in a hot frying pan.

Mix the vinegar, oil, salt and pepper in a bowl and toss with the beetroot pieces. Fold in the torn basil leaves. Arrange the salad on the plates. Garnish with walnuts and crumbled fresh goat's cheese, then serve.

Note: Beetroot tends to stain. It is a good idea to wear disposable gloves when peeling and chopping.

Nutritional values per serving
Calories: 275 kcal; Protein: 8 g; Fibre: 5 g; Salt: 0.3 g; Potassium: 610 mg

Notes

Notes

A service provided by STADAPHARM

Disclaimer

This information is of a general nature and should not be regarded as specific advice for any individual patient. For personalised advice, please speak to your nutritionist.

You can find further information and advice on living with kidney disease at ***www.dialyse-und-ich.de***

9708111 07/2026

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