

Eating a plant-based diet with Chronic Kidney Disease (CKD)

Angeline Taylor, Renal Dietitian

Stage 1-5
 (not receiving dialysis)

What is CKD?

Chronic Kidney Disease (CKD) is a condition where the kidneys don't work as well as they should.



It affects **10%** of the adult population globally. **Diabetes and high blood pressure (hypertension)** are the leading causes.

Stages of CKD

	eGFR
1	90 or higher Normal kidney function with some kidney damage
2	89-60 Mild loss of kidney function
3a	Mild to moderate loss of kidney function 59-45
3b	Moderate to severe loss of kidney function 44-30
4	Severe loss of kidney function 29-15
5	Kidney failure (not receiving dialysis) less than 15

CKD is classified into stages, **stage 1** being the early stage and **stage 5** being the most advanced.

The stage of your CKD is mostly determined by your '**Estimated Glomerular Filtration Rate**', also called **eGFR**.

When CKD progresses beyond **stage 5**, then this is known as **kidney failure** (or **renal failure**). To sustain life, dialysis or a kidney transplant will be needed.

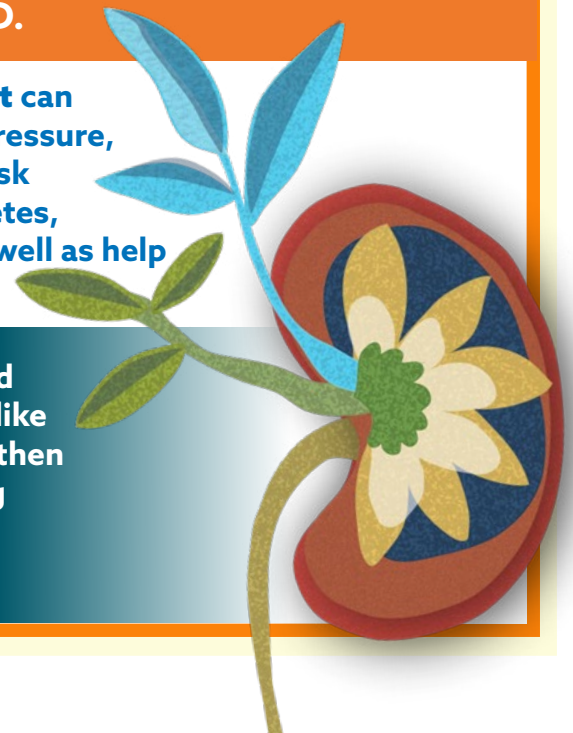
Why eat a plant-based diet?

There are lots of different reasons for someone to develop CKD, but, the risk of progression through the stages to end stage can be related to: **High blood pressure, Uncontrolled diabetes, Obesity, Smoking, Cardiovascular disease** (a condition that affects the heart and blood vessels, which is common when you have CKD).

Managing these conditions may help slow down the progression of CKD.

A healthy plant-based diet can help manage high blood pressure, diabetes and reduce the risk of developing type 2 diabetes, cardiovascular disease as well as help with weight loss.

If you have been diagnosed with CKD, and you would like to eat a plant-based diet, then you may find the following information a useful guide.



Eating a plant-based diet with Chronic Kidney Disease (CKD)

Stage 1-5
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A healthy plant-based diet has a greater emphasis on...

What is a plant-based diet?



What can I eat?

Eat a variety of vegetables and fruit every day

Vegetables and fruit should make up a **third** of the food you eat every day.



Aim for at least **5** portions every day, **5** more if possible.

Note: it is advisable that you **avoid star fruit**. Star fruit has a toxin, caramboxin, that can build up in the body and become harmful to those with CKD.



Enjoy a variety of starchy foods



Aim for a third of your daily diet from these foods.

Ideally choose whole grain high fibre varieties such as whole wheat pasta, brown rice, and wholemeal breads or chapatis.

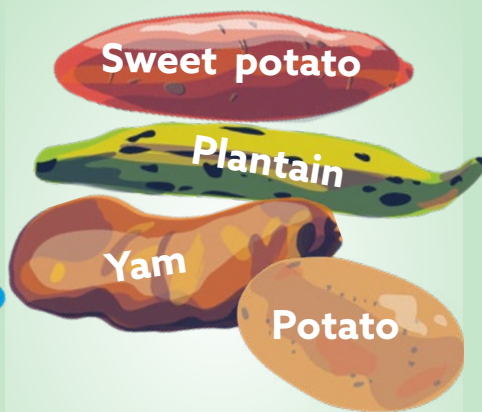


Or you could choose grains such as oats, barley, quinoa, buckwheat, bulgur wheat, millet, or whole wheat couscous.

Porridge or cereals such as wheat biscuits, shredded whole grains, or a no added sugar muesli are great options for breakfast.



You could also eat



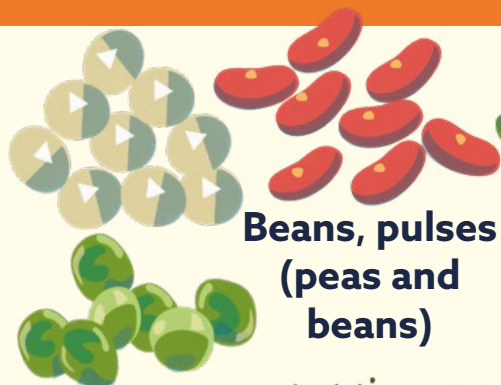
Where possible **eat their skins** to benefit from the **extra fibre**.

Limit ultra-processed potatoes such as chips, potato waffles or croquets.



Instead opt for baked, boiled or mashed potatoes. It's best to keep the skins on.

Eat plant sources of protein such as



Beans, pulses (peas and beans)



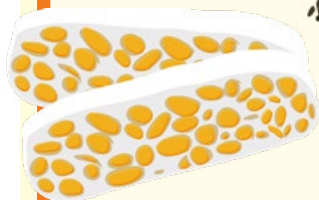
Soya beans



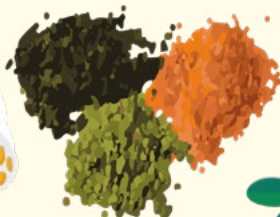
Soya chunks



Mycoprotein (eg Quorn) and other meat alternatives can also be included occasionally but **be careful** as these are often high in fat and salt.



Tempeh



Lentils



Unsalted nuts and seeds



Tofu

Choose healthy sources of fat

such as avocado, nuts and seeds.

Eat some flaxseed, hemp seed, chia seed or walnuts daily in place of oily fish to ensure a source of omega-3 fats. You will need about one tablespoon of chia seed or ground flaxseed, two tablespoons of hemp seed or six walnut halves daily.



For cooking choose a vegetable oil such as rapeseed or olive oil but **only use small amounts.**



Limit processed foods high in sugar and white flour. Such as cakes, pastries, biscuits, and sweets, even if they claim to be plant-based.



Limit palm oil and coconut oils, as these are high in saturated fats which are less healthy.



Consider choosing a plant-based dairy alternative such as oat or soya milk. Where possible, choose unsweetened varieties, with added calcium and vitamin D. It is best to limit plant milks and dairy alternatives (such as yoghurt), to 300ml (1/2 pint) a day if they have phosphate additives listed in the ingredients.

Reducing salt



Limit using salt and eating salty foods as this may help to lower your blood pressure and **slow the progression of your CKD.** It is best to eat no more than 5g (one teaspoon) of salt a day. This includes salt already added to foods.

Tips to reduce salt in your diet include:

Limit processed, convenience and take away foods.

Cook meals from scratch wherever possible.

Reduce or avoid adding salt to home cooking or at the table, this includes all types of salt, e.g. rock, sea, Himalayan pink, garlic and kosher.

Limit the use of high salt condiments such as sauces, soy sauce, miso.

Where recipes call for stocks or sauces, **choose zero salt, low salt** or the **reduced salt** alternatives that are widely available.



Flavour food

using a variety of spices, herbs (dried and fresh), lemon or lime juice. **Be careful** with seasoning mixes as these can contain **a lot of salt.**



Give your taste buds time to adapt to less salt, this may take **4-6 weeks.**

Check and compare food packaging and labels to find those with the **lowest amount of added salt.**

Reducing salt from packaged foods

Most packaged foods have a colour coded 'Traffic Light Symbol' on the front of their packaging. If buying packaged foods then it is best to **avoid or limit those that are coloured red for salt**, which means the food is **high** in salt.

Choose more greens and ambers instead.

Not all foods carry the traffic light symbols. In which case, you may need to **check the nutritional information.** This is often found on the **back of food packaging.**

What to look for on the nutritional information:

Check the **'per 100g'** section on the nutritional information table for salt and compare with the table below:

Per 100g	Low	Medium	High
Salt	0-0.3g	0.3-1.5g	More than 1.5g
Sodium	0-0.1g	0.1-0.6g	More than 0.6g

Other diet and lifestyle considerations

What to drink

Drink adequate amounts of fluid so that you stay hydrated.

The amount of fluid needed will vary from person to person and depends on level of activity, how much you sweat, your age, gender, and the temperature as well as other factors.

You don't need to drink excessive amounts, just enough to keep your urine a pale straw colour is adequate.



It is best to limit sugary drinks or adding sugar to your drinks.



If you drink fruit juice or smoothies then **limit to 150ml a day.**



Tea and coffee both contribute to fluid but limit caffeine to 300mg a day or consider decaffeinated drinks as caffeine can increase your blood pressure. 300mg is approximately 2-3 coffees depending on strength, or 5-6 teas.

Exercise: Being active may help to maintain a healthy weight, as well as having many other benefits.

The weekly exercise guidance for adults is:

At least 150 minutes moderate intensity e.g. a 30-minute brisk walk 5 times a week, or 75 minutes vigorous activity, or a mixture of both. As well as muscle strengthening activities on two days a week.



Loss of appetite

Occasionally people can lose their appetite in the advanced stages of CKD.

If you notice any nausea, vomiting or taste changes, or have lost weight unintentionally, then you **may need some advice from a kidney dietitian.**

Smoking



If you currently smoke, then it is strongly advisable that you stop.

Alcohol

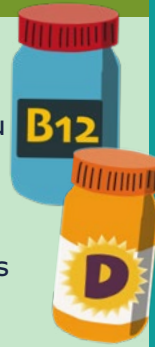
There is no safe level of drinking, however, if you do consume alcohol, then to lower your risk of harm you should keep within the government guidance of no more than 14 units per week for both men and women.

Spread your drinking evenly over three or more days and have several alcohol-free days per week (always check alcohol consumption is safe with your medication). If you do not consume alcohol there is no health benefit to starting now.



Vitamin and mineral supplements

Unless advised otherwise, there are **no vitamin and mineral supplements required for CKD**. If you choose a plant-based diet, you should get a regular source of **vitamin B12**, **vitamin D**, and **iodine**. If you decide to take a supplement, you should **speak to a kidney dietitian to get advice** on which supplements are best for someone with a CKD.



Avoid taking a fish oil supplement as these may cause unsafe levels of **vitamin A** in the body.



If you wish to take any other supplement or a herbal remedy, then it is **best to discuss this with your doctor or kidney dietitian to ensure it is safe to take.**

Potassium, phosphate, and protein:

Sometimes people with CKD need to restrict potassium, phosphate, and protein-rich foods, **but not always**.

If you have been advised to restrict one of these, then a kidney dietitian can help you manage this.

Studies show that eating large amounts of an additive called **phosphate**, can be **damaging** to people with **any stage of CKD**.

So, it's best, where you can, to **limit processed foods**, as these often contain phosphate additives. Shown as **'phosph'** as part of a word in the ingredients list (for example; **phosphoric acid** or **polyphosphate**).

Links to other useful resources



[Plant based Eatwell Guide](#)

[Hypertension factsheet](#)

[BDA Food fact sheet Plant -based diet](#)

[Type 2 diabetes factsheet](#)

[Vegetarian, vegan and plant-based diets](#)

[High cholesterol factsheet](#)

[BMI calculator](#)

[Kidney Kitchen](#)

[Weight loss tips](#)

[Kidney Beam](#)

References

Adair KE, Bowden RG. Ameliorating Chronic Kidney Disease Using a Whole Food Plant-Based Diet. **Nutrients**. 2020 Apr 6; 12(4):1007. doi: 10.3390/nu12041007. PMID: 32268544; PMCID: PMC7230354.

Babich JS, Kalantar-Zadeh K, Joshi S. Taking the Kale out of Hyperkalemia: Plant Foods and Serum Potassium in Patients With Kidney Disease. **J Ren Nutr**. 2022 Nov;32(6):641-649. doi: 10.1053/j.jrn.2022.01.013. Epub 2022 Feb 5. PMID: 35131414.

Bach KE, Kelly JT, Palmer SC, Khalesi S, Strippoli GFM, Campbell KL. Healthy Dietary Patterns and Incidence of CKD: A Meta-Analysis of Cohort Studies. **Clin J Am Soc Nephrol**. 2019 Oct 7; 14(10):1441-1449. doi: 10.2215/CJN.00530119. Epub 2019 Sep 24. PMID: 31551237; PMCID: PMC6777603.

Carrero J et al, Plant-based diets to manage the risks and complications of chronic kidney disease, **Nat Rev Nephrol** 2020 Sep; 16(9):525-542 doi: 10.1038/s41581-020-0297-2. Epub 2020 Jun 11. PMID: 32528189.

Cases A et al, Vegetable-based diets for chronic kidney disease? It is time to reconsider, **Nutrients** 2019 Jun; 11(6):1263 doi: 10.3390/nu11061263. PMID: 31167346; PMCID: PMC6627351.

Joshi S, McMacken M, Kalantar-Zadeh K. Plant-Based Diets for Kidney Disease: A Guide for Clinicians. **Am J Kidney Dis**. 2021 Feb;77(2):287-296. doi: 10.1053/j.ajkd.2020.10.003. Epub 2020 Oct 16. PMID: 33075387.

Joshi S, Hashmi S, Shah S, Kalantar-Zadeh K. Plant-based diets for prevention and management of chronic kidney disease. **Curr Opin Nephrol Hypertens**. 2020 Jan;29(1):16-21. doi: 10.1097/MNH.0000000000000574. PMID: 31725014.

Kalantar-Zadeh K, Joshi S, Schlueter R, Cooke J, Brown-Tortorici A, Donnelly M, Schulman S, Lau WL, Rhee CM, Streja E, Tantisattamo E, Ferrey AJ, Hanna R, Chen JLT, Malik S, Nguyen DV, Crowley ST, Kovesdy CP. Plant-Dominant Low-Protein Diet for Conservative Management of Chronic Kidney Disease. **Nutrients**. 2020 Jun 29; 12(7):1931. doi: 10.3390/nu12071931. PMID: 32610641; PMCID: PMC7400005.

KDIGO 2020 Clinical practice guideline for diabetes management in CKD, vol 98, issue 45, October 2020

Kdigo 2021 Clinical practice guideline for the management of glomerular disease, vol 100, issue 45, October 2021 doi: 10.2215/CJN.12391018. Epub 2019 Apr 25. PMID: 31023928; PMCID: PMC6500948.

Kim H et al, Plant-based diets and incident CKD and kidney function, **CJASN** May 2019, 14 (5) 682-691

Moore J. Whole-Food Low-Protein Plant-Based Nutrition to Prevent or Slow Progression of Chronic Kidney Disease. **J Ren Nutr**. 2021 Mar;31(2):e1-e4. doi: 10.1053/j.jrn.2020.03.005. Epub 2020 Jun 23. PMID: 32586713.