آغا خان یونیورسٹی ہسپتال
The Aga Khan University Hospital

Nutrition in Dialysis

Patient Information

A Unit of **The Aga Khan Hospital and Medical College Foundation**, Licensed under Section 42 of the Companies Ordinance, 1984
Registered Office: Stadium Road, P.O. Box 3500, Karachi 74800, Pakistan.

NUTRITION DURING HAEMODIALYSIS

Introduction

Kidneys are the bean-shaped organs responsible for clearing toxic materials from your body and help maintain a balanced level of nutrients in your blood. If your kidneys are not performing as they should, your body is unable to prevent the buildup of harmful minerals. In this case, you might need to get haemodialysis, commonly known as dialysis, a procedure in which your blood is put through a machine which clears toxins from it. If your kidneys are underperforming, other nutrients may be lost with your urine and might need to be replaced. This is why, as you need haemodialysis, you will also need to change your diet.

Which nutrients should I include in my diet?

The five main nutrients that are important to consider when planning a meal for a dialysis patient:

1. Protein
2. Sodium
3. Potassium
4. Calcium
5. Phosphorus.

PROTEIN

Why should I include protein in my diet during dialysis?

Protein helps fight infections, repairs tissues and builds muscles, and adequate intake of protein is essential for patients getting dialysis. Before dialysis, protein levels are managed to prevent waste products from accumulating in the blood while after dialysis, much of the protein is lost from the body, increasing the need for dietary protein.

How much protein should I take daily?

Your daily protein need depends on your body weight. Your dietitian will help decide how much protein you need in a day. Each of the below can constitute one serving of protein:

- 1 whole egg
- 1 cup milk
- 1 oz. cooked meat, fish or poultry
- 1 oz. cheese
- ¼ cup pudding or custard
- 1 tbsp. peanut butter

The following are some easy ways to estimate serving sizes:

- Whole thumb is about the size of 1 oz.
- Three stacked dice are about the size of 1 oz.
- A deck of cards is about the size of 3 oz.
- Your palm is about the size of 3 to 4 oz.
- Your clenched fist is about the size of one cup.

What are some healthy protein sources?

Protein sources in both animal and plant food are listed below.

Animal Protein	Plant Protein
Chicken, lamb, beef, mutton, turkey	Beans, peas, lentils
Eggs	Soy milk (tofu)
Dairy products (yogurt, cheese, milk)	Sunflower seeds
Seafood	Peanut butter

SODIUM

Why should I limit my sodium intake during dialysis?

High levels of sodium can be dangerous if you suffer from kidney disease, because your kidneys are not able to get rid of the excess sodium. This could lead to water accumulation in the body resulting in an increase in the blood pressure. Therefore you need to follow a low-sodium diet, which includes limiting the intake of salt and other sodium-rich ingredients in your food, including:

- Olives
- Ready-to-fry processed foods
- Soy sauce and other commercial sauces
- Sausages
- Chips and nimco
- Liver
- Baking powder
- Salted nuts
- Pickles
- Bakery products
- Cheese
- Chinese salt
- Energy drinks and sodas
- Canned fruits and vegetables
- Chocolate milk
- Milkshakes
- Self-rising flour

What seasonings can I use instead of salt?

There are a few good alternatives to salt seasonings which you can safely use:

- Lemon or vinegar taste excellent with meat, fish and with many vegetables.
- Meat may be seasoned with onion, garlic, green pepper, ginger.

Although these options are relatively safe for patients getting dialysis, you should ask your dietitian before including them in your diet.

POTASSIUM

Should I control the intake of potassium during my treatment?

Yes. When your kidneys are unable to function properly, they may fail to remove the excess potassium in the body, leading to high levels of potassium build-up in blood. This may cause nausea, weakness, numbness and slow pulse.

How much potassium should I include in my diet?

A table listing different sources of potassium is shared below. You may include 2-3 servings from the low potassium group or 2 serving from the medium potassium group in your diet every day. On the day of dialysis, please restrict yourself to one serving from a high potassium source.

Low potassium (5-150 mg)	Medium potassium (150-250 mg)	High potassium (250-500 mg)
Pineapple (1/2 cup)	Apple (1 medium)	Apricots (3)
Strawberries (1/2 cup)	Cherries (8-10)	Banana (1 medium)
Green beans (1/2 cup)	Grapes (10-15)	Dates (5)
Cabbage (1/2 cup)	Mango (1/2 medium)	Figs (3)
Cauliflower (1/2 cup)	Melon (1/2 cup)	Kiwi (1)
Corn (1/2 cup)	Papaya (1/2 cup)	Orange (1medium)
Cucumber (1/2)	Plums (2)	Peach (1 medium)
Lettuce (1 cup)	Pear, fresh (1 medium)	Prunes (5)
Okra (3 pods)	Watermelon (1 cup)	Sweet potatoes (1/4 cup)
Onions (1/2 cup)	Mushrooms (1/2 cup)	Spinach, turnip, broccoli (1/2 cup)
Peas (1/2 cup)	Carrots (1/2 cup)	Lentils, chickpeas, dal channa (1/2 cup)
Radishes (5)	Eggplant (1/2 cup)	Potatoes (1/2 cup or one small)
Turnips (1/2 cup)	Peanut butter (2 tbsp.)	Pumpkin (1/2 cup)
Apple juice (1/2 cup)	Capsicum (1)	Spinach (1/2 cup)
Cranberry juices (1 cup)	Soaked potatoes (1/2 cup)	Tomato (1 medium)
Grape juice, frozen (1 cup)	Grape juice (1/2 cup)	Tomato sauce (1/4 cup)
Lemonade (1 cup)	Pineapple juice (1/2 cup)	Sweet potatoes (1/4 cup)
Sherbets (1 cup), tea (1 cup)	Fruit cocktail (1/2 cup)	Dried fruits (1/4 cup)

What high potassium foods should I avoid?

- **Milk** – Limit the intake of milk to one cup per day unless told otherwise by your doctor or dietitian.
- **Food supplements** – Always discuss with your dietitian before adding any food supplements to your diet.
- **Sodium-free foods or salt substitutes** – Although some sodium-free foods and salt substitutes are safe to use, you should speak with your dietician before using them.

How can I reduce potassium intake from natural sources?

Potassium is found in many vegetables and legumes. Here are a few tips on how you can reduce potassium levels in vegetables.

- Soak the vegetables or legumes (such as potatoes, sweet potatoes and beans) in water for a few hours before using them.
- When using vegetables, rinse them thoroughly after peeling and cutting them. Soak them for at least an hour in a bowl of warm water. Use four times more water than the vegetables. Drain and rinse again.
- Similarly, legumes too should be soaked and then cooked.
- Use four times more water than food when boiling the vegetables and legumes.

PHOSPHORUS

Why should I limit the intake of phosphorus?

Phosphorus plays a key role in keeping your bones healthy. It is also important for proper functioning of blood vessels and muscles. In chronic kidney disease, however, phosphorus can build up in the blood, leading to thinning and weakening of bones. This can put you at risk of fractures and bone deformities.

Which foods contain high levels of phosphorus?

Foods rich in phosphorus should be avoided when getting dialysis. Some of these foods include:

- Meat, poultry, fish and ready to eat meat packages.
- Bran cereals, brown rice and oatmeal, dried beans nuts and peas.
- Dairy foods (milk, yogurt, ice-cream, cheese, cheese spread, chocolate milk, pudding and custard).
- Soft drinks.

Read the labels carefully when buying commercially packed food. If you find the word ‘PHOS’ on the packaging, it indicates that the product contains phosphorus.

How can I provide my body with the required calcium if I limit the intake of phosphorus?

Calcium is extremely important for the health of bones and muscles. However, foods containing calcium are also rich in phosphorus. The best thing you can do to maintain an adequate level of calcium in your body is adding vitamin D to your diet. For this, your doctor may prescribe you supplement and recommend you to limit the intake of high-phosphorus foods and take phosphate binders.

How can I control my fluid intake?

As your disease advances, your kidneys’ ability to filter the urine properly keeps deteriorating. This may lead to excessive retention of fluid in the body, resulting in weight gain, shortness of breath and high blood pressure. For this, your doctor may advise you to limit your intake of fluid.

A simple way to determine your daily fluid needs is to measure total urine output over 24 hours and then add 500 ml (2 cups) to it. Use the simple formula below to make calculations:

24-hour urine output: _____ml + 500 ml = _____ ml/day

Fluids that should be factored in when calculating your daily intake of water requirement include tea, coffee, gravy, curry, ice cubes and soup.

Sample Menu

This sample menu gives a basic idea of what you could include to have a balanced diet. However, it is best to consult your dietician for a customized diet plan for you for optimum results.

Breakfast

2 boiled egg whites or one boiled egg with yolk
2 slices of white bread with one tsp. jam or one chapatti (without bran)
OR
½ cup sabudana or rice or suji kheer in milk
½ cup of tea

Mid-morning Snack

One medium or low potassium fruit or one cup lemonade or ½ cup salad

Lunch

One cup raw salad (low and medium potassium vegetable)
2 oz of lean meat, fish or poultry
1-2 cup white rice or 1-1½ chapatti (without bran)
½ cup jelly or ½ cup applesauce

Tea-time Snack

½ cup tea with ½ an egg and a vegetable sandwich or ½ cup lemonade
or one medium/low potassium fruit

Dinner

One cup raw salad (low and medium potassium vegetable)
2 oz of lean meat, fish or poultry
1-2 cup white rice or 1-1½ chapatti (without bran)
½ cup jelly or ½ cup applesauce

Bed-time Snack

One cup low-fat milk