

# **FOOD AND NUTRITION: WHAT SHOULD YOU EAT IF YOU HAVE KIDNEY DISEASE?**

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# CONTENT

- **Basics of Kidney**
- **What Should You Eat for Your Chronic Kidney Disease (CKD)?**
- **Is Herbal Supplement Beneficial or Harmful for CKD?**



Aristolochic acid

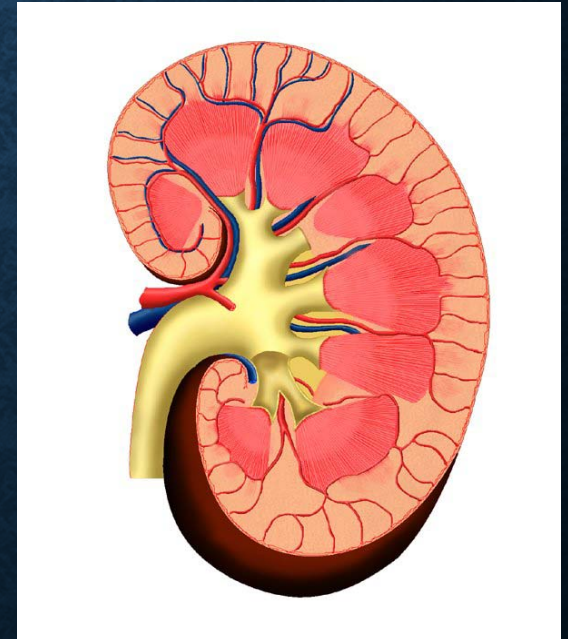


Echinacea



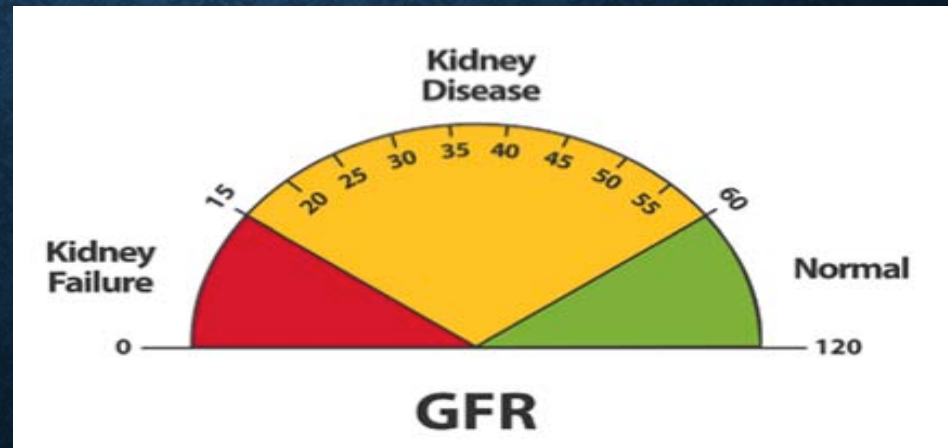
# BASICS OF KIDNEY

- **Maintain homeostatic balance**
  - **Fluid**
  - **Electrolytes**
- **Excretion of metabolic waste**
  - **Urine**
- **Produce hormones**
  - **Renin**
  - **Erythropoietin**
  - **Vitamin D**



# BASICS OF KIDNEY

- **Measurement of Kidney Function**
  - **Glomerular Filtration Rate (GFR):** GFR is measure of how well your kidneys filter blood  
Use estimated GFR called " eGFR".
- **Stages of Chronic Kidney Disease (CKD)**
  - **5 stages (1-5)**
  - **Stage 3- 5**



# CKD STAGES

Stage	Description	eGFR
1	Kidney damage but normal eGFR	90 or more
2	Kidney damage with mild decrease of eGFR	60 - 89
3a	Kidney damage with moderate decrease of eGFR	45 - 59
3b	Kidney damage with moderate decrease of eGFR	30 - 44
4	Kidney damage with severe decrease of eGFR	15 - 29
5	Kidney failure: need renal replacement therapy	Less than 15

# CKD RISK FACTORS

- **Diabetes**
- **Hypertension**
- **Family history of kidney failure**
  - Polycystic kidney disease (PKD)
- **Cardiovascular disease**
- **Prolonged consumption of over the counter medication (i.e. ibuprofen) or herbal supplements (Aristolochic acid, Echinacea, Creatine, Chromium, Cat's claw)**

# **WHAT SHOULD YOU EAT FOR YOUR CKD?**

- **Purpose**

- **To maintain good nutritional status**
- **Slow progression of CKD**
- **To treat complications**

- **Key Diet Components**

- **Controlling blood pressure: Low sodium intake**
- **Reducing protein intake if EXCESS**
- **Managing diabetes**

**THERE IS NO DIET  
CALL “RENAL DIET”**



**WHAT SHOULD I EAT  
WITH MY CKD???**

**EVERYTHING IS  
INDIVIDUALIZED BASED ON  
YOUR OWN MEDICAL  
PROBLEMS**

# IN GENERAL

- **Low Sodium**
- **Low Potassium**
  - **Is your blood potassium level high?**
  - **Do you take medication called “ACEI or ARB”?**
- **Moderate Amount of Protein**
  - **Do you spill protein in urine?**
- **Low Phosphorus**

# **LOW SODIUM DIET**

- **What does sodium do in the body?**
  - **Thirst**
  - **Fluid gain**
  - **Increase blood pressure**
- **How much sodium should I take a day?**
  - **Please choose**
    - **1 Table spoon of salt**
    - **1 teaspoon of salt**
    - **1500 - 2000mg of sodium**

# LOW SODIUM DIET

- **Nutrition Label**
- **What should you read?**
  - **Portion size**
  - **Servings per container**
  - **Nutrients**
    - **Calories**
    - **Protein**
    - **Fat (total, saturated fat, trans fat)**
    - **Cholesterol**
    - **Carbohydrates (sugar, fiber)**
    - **Vitamins and Minerals**
    - **Sodium**
      - **Your restriction**
      - **Healthy population**

<b>Nutrition Facts</b>	
Serving Size 1 cup (228g)	
Servings Per Container 2	
Amount Per Serving	
<b>Calories</b> 250	Calories from Fat 110
% Daily Value*	
<b>Total Fat</b> 12g	<b>18%</b>
Saturated Fat 3g	<b>15%</b>
Trans Fat 3g	
<b>Cholesterol</b> 30mg	<b>10%</b>
<b>Sodium</b> 470mg	<b>20%</b>
<b>Total Carbohydrate</b> 31g	<b>10%</b>
Dietary Fiber 0g	<b>0%</b>
Sugars 5g	
<b>Protein</b> 5g	
Vitamin A	<b>4%</b>
Vitamin C	<b>2%</b>
Calcium	<b>20%</b>
Iron	<b>4%</b>
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.	
	Calories: 2,000    2,500
Total Fat	Less than 65g    80g
Sat Fat	Less than 20g    25g
Cholesterol	Less than 300mg    300mg
Sodium	Less than 2,400mg    2,400mg
Total Carbohydrate	300g    375g
Dietary Fiber	25g    30g

Portion Size

Number or servings per Container

Sodium

Sodium Recommendation For Healthy People

## Nutrition Facts

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	Calories:	2,000	2,500
Total Fat	Less than	65g	80g
Sat Fat	Less than	20g	25g
Cholesterol	Less than	300mg	300mg
Sodium	Less than	2,400mg	2,400mg
Total Carbohydrate		300g	375g
Dietary Fiber		25g	30g

# LOW POTASSIUM

- **What is normal potassium level?**
- **Do you take medication called “ACEI or ARB”?**
  - **What are these?**
    - **ACEI: Angiotensin Converting Enzyme Inhibitor**
      - Lisinopril, Enalapril
    - **ARB: Angiotensin Receptor Blocker**
      - Avapro, Losartan
  - **Why do you need this meds?**
- **What is your potassium level?**

# WHAT IS NORMAL POTASSIUM LEVEL?

- **Safe Zone**

- 3.5 – 5.0 (mmol/L)

- Harvard Vanguard Medical Associate: **3.3 – 5.3**

- **CAUTION**

- 5.1 (5.4) – 6.0

- **DANGER**

- Greater than 6.0



# **TO KEEP POTASSIUM LEVEL IN SAFE ZONE**

- **Limit high potassium foods**
- **Eat a variety of foods in moderation**
- **Modify cooking methods to lower potassium content of the foods**
- **Do not drink or use the liquid from canned fruits or vegetables**
- **Remember portion size!!**



# HIGH POTASSIUM FOODS

Food	Amount	Potassium
<b>Fruits, Dried Fruits and Fruit juices</b>		
<b>Avocado</b>	$\frac{1}{4}$	<b>149</b>
<b>Banana</b>	$\frac{1}{2}$ of 7"	<b>422</b>
<b>Cantaloupe</b>	$\frac{3}{4}$ cup (1/8)	<b>320</b>
<b>Dates</b>	$\frac{1}{4}$ c	<b>292</b>
<b>Honeydew</b>	$\frac{3}{4}$ cup (1/8)	<b>303</b>
<b>Kiwi</b>	1	<b>237</b>
<b>Mango</b>	1	<b>323</b>
<b>Nectarine</b>	1	<b>277</b>
<b>Orange</b>	1	<b>237</b>
<b>Prunes</b>	1 cup	<b>796</b>
<b>Raisins</b>	$\frac{1}{4}$ cup	<b>272</b>
<b>Orange Juice</b>	8 floz	<b>496</b>
<b>Prune Juice</b>	8 floz	<b>706</b>

# HIGH POTASSIUM FOODS

Food	Amount	Potassium
<b>Vegetables</b>		
<b>Artichoke</b>	<b>1</b>	<b>343</b>
<b>Broccoli</b>	<b>½ cup</b>	<b>229</b>
<b>Brussels Sprouts</b>	<b>½ cup</b>	<b>248</b>
<b>Carrots – raw</b>	<b>1 cup</b>	<b>390</b>
<b>Beans (kidney, pinto, red, white and Lima)</b>	<b>½ cup</b>	<b>380 – 500</b>
<b>Mushrooms – canned</b>	<b>½ cup</b>	<b>331</b>
<b>Parsnips</b>	<b>½ cup</b>	<b>287</b>
<b>White Potatoes</b>	<b>1 (small) baked</b>	<b>925</b>
<b>Sweet (Yam)</b>	<b>¾ cup</b>	<b>918</b>
<b>Pumpkin</b>	<b>½ cup</b>	<b>252</b>
<b>Tomato</b>	<b>1 (small fresh)</b>	<b>291</b>
<b>Tomato sauce</b>	<b>½ cup</b>	<b>807</b>
<b>Vegetable juices (V8)</b>	<b>8 floz</b>	<b>520</b>
<b>Winter squash</b>	<b>½ cup</b>	<b>448</b>

# HIGH POTASSIUM FOODS

Food	Amount	Potassium
<b>Other Foods</b>		
<b>Chocolate</b>	<b>1 bar (1.5 oz)</b>	<b>150</b>
<b>Granola</b>	<b>½ cup</b>	<b>330</b>
<b>Milk (all type)</b>	<b>8 fl oz</b>	<b>348</b>
<b>Yogurt</b>	<b>8 oz</b>	<b>380</b>
<b>Organ meat</b>	<b>3 oz</b>	<b>340</b>
<b>Molasses</b>	<b>1 Tbsp</b>	<b>292</b>
<b>Nuts and seeds</b>	<b>1 oz</b>	<b>206</b>
<b>Peanut butter</b>	<b>2 Tbsp</b>	<b>207</b>
<b>Lite salt</b>	<b>¼ tsp</b>	<b>354</b>

# LOW POTASSIUM FOODS

<b>Fruits</b>	<b>Vegetables</b>	<b>Other foods</b>
<p>Apples – 1            Applesauce            Apricots (fresh) – 1 medium            (canned) – ½ cup            Blackberries            Blueberries            Cherries            Cranberries            Fruit Cocktail            Grapefruit – ½            Grapes            Mandarin Oranges            Peaches (fresh) – 1 small                              (canned) – ½ cup            Pears (fresh) – 1 small                              (canned) – ½ cup            Pineapple            Raspberries            Strawberries            Tangerines – 1            Watermelon – 1 cup            Apple, cranberry, grape,            grapefruit and pineapple            juice</p>	<p>Alfalfa Sprouts            Asparagus – 6 spears            Beans: green or wax            Bean Sprouts            Beets, cooked            Cabbage            Carrots, cooked            Cauliflower            Celery – 1 stalk            Corn            Cucumber            Eggplant            Kale            Lettuce            Mixed Vegetables            Mushroom – fresh            Okra            Onions            Parsley            Peas, green            Radish            Rhubarb            Squash (summer, zucchini)</p>	<p>Rice            Noodles            Pasta            Bread and bread            products – not whole            grain            Cereals – not bran or            whole grain            Cake – not carrot or            chocolate            Coffee – limit 1 cup            Cookies – without nut or            chocolate            Pies – without chocolate            or high potassium fruits            Tea – limit 2 cups</p>



# LOW POTASSIUM DIET

- Know your potassium level
- Know your current medications
  - ACEI
  - Diuretics (water pill)
- Watch very high potassium foods and portions
- Ask your dietitian



# DIETARY PROTEIN

- **What is protein?**

- **Essential nutrient in the body**
  - **Growth**
  - **Build muscles**
  - **Repair tissues**

- **Why do you concern protein with CKD?**

- **Body uses protein and produce waste product called “urea” which is removed by kidney**
- **In CKD, urea accumulate in the body**



# DIETARY PROTEIN



- **What are protein sources?**

- High biologic value protein(HBV): animal products
- Low biologic value protein (LBV): plant products

- **Do you spill protein in the urine?**

- Amount of protein in the urine determine whether you should restrict protein





# DIETARY PROTEIN

- **How much should I eat protein daily?**
  - 0.8 – 1.3gm/kg/body weight/day
  - 2/3 (67%) to 70% should come from HBV protein foods
- **DO NOT FOLLOW LOW CARBOHYDRATE HIGH PROTEIN WEIGHT LOSS DIET**

# DIETARY PROTEIN

- **Be sure to eat all of the servings of protein in your diet plan**
- **Eat enough calories to avoid your body using protein as an energy source**
- **Portion size is important**
- **Meat, fish and poultry must be measured after cooking without bone, skin or fat**
- **Consult with your renal nutritionist before you start low protein diet or high protein low carbohydrate weight loss diet**

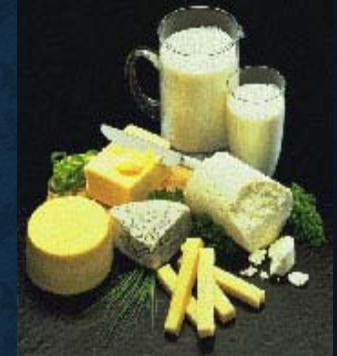
# PHOSPHORUS

- **What is phosphorus?**
  - Mineral that helps bone healthy
  - Keep blood vessels and muscles working
- **Why should you watch phosphorus in CKD?**
  - Phosphorus can build up in the blood vessels, making bones thins, weak and break

# PHOSPHORUS

- **What foods are high in phosphorus?**

- All foods rich in protein especially dairy products, organ meats
- Beans, bran products, nuts and seeds
- Dark soda (cola, root beer) and bottled iced tea



- **What foods are low in phosphorus?**

- Fresh fruits and vegetables
- Rice milk (if not enriched)
- Bread, pasta and rice
- Corn and rice cereals



# PHOSPHORUS

- **Do not consume excess protein in your diet**
  - **Meat, poultry, fish**
  - **Dairy foods: 1 cup milk or 1 oz cheese max**
- **Eat more fresh fruits and vegetables**
- **Many packaged foods contain additives containing phosphorus: **READ LABEL** and avoid for words with **PHOS****

**Ingredients:** Potatoes, vegetable oil (partially hydrated soybean oil), salt, dextrose, disodium dihydrogen pyro**phos**pate .....

# **HERBAL SUPPLEMENTS**

**Are They Beneficial or Harmful?**

# HERBAL SUPPLEMENTS

- Herbal supplement manufacturers **DO NOT** have to get approval from the Food and Drug Administration (FDA) before putting the products on the market
- Over 7,000 herbal supplements in late 1990's
- **Are they safe?**
  - FDA is monitoring the safety once they are on the market
  - It may be harmful to use with prescription meds

# **HERBAL SUPPLEMENTS**

- **How to know what's in an herbal supplement?**
  - **Name of herbal supplements**
  - **Name and address of manufacturer**
  - **Complete list of ingredients and serving size**
- **How to know if herbal supplement's claims are true?**
  - **Ask your doctor or pharmacist**
  - **Look for scientific research findings**
  - **Contact manufacturer**



# HERBAL SUPPLEMENTS

- **Who shouldn't use herbal supplements?**
  - **You are taking prescription or over the counter (OTC) medications**
  - **You are pregnant or lactating**
  - **You are having surgery**
  - **Children (< 18 years old) or elderly**
  - **You have chronic medical problems such as CKD**

# HERBAL SUPPLEMENTS

- **Safety tips for using herbal supplements**
  - **Follow supplement instructions**
    - Don't take extra dosage
  - **Keep track of what you take**
    - How long and how much
  - **Be extra cautious about supplements manufacturer outside the USA**
    - China, India and Mexico
  - **Avoid products with tainted past**
    - Most weight loss pills
  - **Check alerts and advisories**
    - FDA regulatory review

# HERBAL SUPPLEMENTS



# HERBAL SUPPLEMENTS HARMFUL FOR THE KIDNEY

- **Aristolochia serpentaria (Snakewood)**
- **Chromium picolinate**
- **Echinacea**
- **Bladderwrack**
- **Germanium**
- **Wormwood oil**
- **Salix daphnoides (willow bark)**
- **Uncaria tomentosa (cat's claw)**
- **Pausinystalia yohimbe**
- **Chaparral**
- **Cranberry**
- **Licorice**



# HERBAL SUPPLEMENTS HARMFUL FOR THE KIDNEY

Common Name	Claims	Renal problems and other side effects
<b>Aristolochic Acid (Snakewood)</b>	<b>Anticonvulsant, aphrodisiac, menstrual stimulant</b>	<b>Acute kidney failure Vomiting, gastroenteritis Muscle spasms</b>
<b>Bladderwrack</b>	<b>Weight loss, thyroid disorder, antibiotic, antioxidant</b>	<b>Polyuria, proteinuria Hyperthyroidism, goiter Gast disturbance, diarrhea</b>
<b>Cat's claw</b>	<b>Dyspepsia, ulcer, anti-inflammatory</b>	<b>Acute nephritis Diarrhea, hypotension, bleeding gums</b>
<b>Chaparral</b>	<b>Antioxidant, anti-inflammatory</b>	<b>Renal cyst Rash, liver failure</b>
<b>Chromium picolinate</b>	<b>Weight loss, hypoglycemic</b>	<b>Acute and chronic nephritis Anemia, cognitive dysfunction Hemolysis, hepatic dysfunction</b>

# HERBAL SUPPLEMENTS HARMFUL FOR THE KIDNEY

Common Name	Claim	Renal problems and other side effects
<b>Cranberry</b>	<b>Urinary tract infection</b>	<b>Kidney stone Nausea, diarrhea, dehydration</b>
<b>Echinacea</b>	<b>Upper respiratory infection</b>	<b>Acute renal failure Fever, drowsiness, headache nausea, vomit, abdominal pain</b>
<b>Germanium</b>	<b>Immunostimulant, anti inflammatory</b>	<b>Minor renal abnormalities Anemia, muscle wasting</b>
<b>Licorice</b>	<b>Peptic ulcer, lupus, infection</b>	<b>Renal injury, acute renal failure Amenorrhea, lethargy, pulmonary edema, weakness</b>
<b>Wormwood oil</b>	<b>Appetite stimulant, heartburn</b>	<b>Acute renal failure Nausea, vomit, muscle ache</b>

# SUMMARY

- **There is no Renal Diet**
- **CKD diet should be individualized on your own medical condition**
- **Herbal supplement should be used with caution**

**Thank you**

