

The KidneyKorner[®]

for people on dialysis from the makers of **Nepro[®]** with Carb Steady[®]

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Vitamin D:

The Sunshine Vitamin



Did you spend 15 minutes outside in the sunshine today? Or eat salmon for lunch? If not, you may be one of the many Americans who aren't getting enough vitamin D. Recent studies show that almost 3 in 4 adults in the US are vitamin D insufficient. This has become a national public health issue as vitamin D plays many important roles in the body. Read on to learn more about what experts call "the sunshine vitamin."

What is Vitamin D and What Does It Do In the Body?

Vitamin D is a nutrient that is important for overall health and helps almost every part of the body. The main function of vitamin D is to help maintain strong bones. It does this by helping the body absorb calcium and maintain adequate levels of calcium and phosphorus in the blood. With calcium, vitamin D helps to protect adults from developing osteoporosis or weak bones. Vitamin D is also necessary for muscles, nerves, and the immune system.



Where Does Vitamin D Come From?

Unfortunately, vitamin D is found naturally in very few foods. Most of the foods that are naturally high in vitamin D are also not commonly eaten by many people. These foods include fatty fish, such as salmon, tuna, and mackerel, as well as cod liver oil. Vitamin D is also found in fortified foods, such as breakfast cereals, milk, and orange juice. But the amount of vitamin D is much lower in fortified foods than in natural food sources, and some of these foods may not be ideal choices for people on dialysis, such as milk and orange juice. In addition, vitamin D is available as a dietary supplement. See the table for the vitamin D levels in various foods .

Vitamin D Levels in Various Foods

Food	Vitamin D content per serving (IU)*	Percent Daily Value (DV)
Cod liver oil, 1 tablespoon	1,360 IU	340% DV
Salmon (sockeye), cooked, 3 ounces	794 IU	199% DV
Mackerel, cooked, 3 ounces	388 IU	97% DV
Tuna, canned in water, drained, 3 ounces	154 IU	39% DV
Milk, vitamin D-fortified, 1 cup	115-124 IU	29-31% DV
Orange Juice, vitamin D-fortified, 1 cup	100 IU	25% DV
Cereal, vitamin D-fortified, ¾-1 cup	40 IU	10% DV

*IU = International Units

Vitamin D is called the “sunshine vitamin” because the body can also make vitamin D when the skin is exposed directly to sunlight. This happens when UVB rays hit the skin and trigger vitamin D production. It doesn't take much sun exposure to get all the vitamin D you need, especially in the warm summer months. Experts say that as little as 15 -30 minutes without sunscreen a few times a week may be enough. But many people don't spend this amount of time outside, even in the summer. And in the winter months in the Northern part of the US (areas north of Boston to Northern California) many people do not get the sunshine needed to provide adequate levels of vitamin D. And it's important to note that you still need to limit your overall sun exposure to help lower the risk of skin cancer.

The vitamin D found in foods, supplements and from sunlight is inactive and must be made active in the body so it can be used properly. This activation is done by the liver and kidneys.

How Much Vitamin D Is Recommended?

In the US, dietary recommendations for healthy population groups are made by a national group of experts at the Food and Nutrition Board of the Institute of Medicine of the National Academies. Recommendations are set to ensure that we get the levels our body needs of each nutrient. For vitamin D, the recommendations vary based on age and gender, and are higher for older adults. However, the current recommendations were established in 1997 and may not be high enough since so many people

have low vitamin D levels. See the table below for the current vitamin D recommendations for healthy adults.

How Do I Know What My Vitamin D Level Is?

Vitamin D levels can be measured in the blood through a blood test. This helps determine if your blood level is too low, normal, or too high.

Studies show that many people are not getting the vitamin D they need and have low blood levels. This is also the case for people with chronic kidney disease (CKD), where low blood levels are common. In these cases, people are often given vitamin D supplements through oral supplements or injections.



Current Vitamin D Dietary Recommendations

Age	Men	Women
19-50 years	5 mcg (200 IU)	5 mcg (200 IU)
51-70 years	10 mcg (400 IU)	10 mcg (400 IU)
71+ years	15 mcg (600 IU)	15 mcg (600 IU)

Why Is Vitamin D Important for People with Chronic Kidney Disease?

Your kidneys play an important role in turning vitamin D into its active form in the body. However, when the kidneys are damaged as with CKD, they lose their ability to perform this job. And as a result the parathyroid hormone (PTH) will try to perform the functions of active vitamin D, most importantly helping to control the calcium and phosphorus levels in the blood. This can cause the PTH level in your blood to be high which can lead to calcium being taken out of your bones. So your healthcare team will be sure to check your PTH level often.

As with the general population, many people with CKD, including those on dialysis, are not meeting their vitamin D needs. This is due to lack of enough sun exposure as well as lack of food sources in the diet. As previously mentioned, people with CKD are also not able to activate vitamin D into its usable form in the body. As a result, many people with CKD have low blood levels of vitamin D and supplements might be needed. Often times, high levels of supplemental vitamin D are needed to get your blood levels back to normal. The

healthcare team will recommend the right supplements for patients, and you should always be sure to check with them before taking any over-the-counter vitamin D supplements.

In summary, vitamin D is necessary for good health. But many of us are not getting what we need. This is true not just for the general public, but for people on dialysis as well. Vitamin D is a hot topic within healthcare and at the 2010 National Kidney Foundation Spring Clinical Meeting national experts showed that people with CKD are often vitamin D deficient and needed supplementation.



As always, be sure to work with your dietitian and healthcare team for the right recommendations and diet plan for you.

Renal nutrition for real life



Between your activities, family and dialysis, sometimes eating right gets lost in the shuffle. But proper nutrition is especially important when you're on dialysis. That's why there's Nepro® with Carb Steady®.

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DIET	MILK	SALMON	VITAMIN D

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Mixed Berry Frozen Bars

Nutrition Facts

Serving Size: 1 Bar
Servings per Recipe: 8

Amount per Serving

Calories 90	Calories from Fat 30
Total Fat	3.5 g
Saturated Fat	1 g
Cholesterol	0 g
Sodium	120 mg
Total Carbohydrate	9 g
Dietary Fiber	1 g
Sugars	3 g
Protein	5 g
Vitamin A	120 IU
Vitamin C	8 mg
Calcium	40 mg
Iron	0.7 mg
Phosphorus	75 mg
Potassium	65 mg

Use under medical supervision.

Mixed Berry Frozen Bars

Servings: 8 **Serving size: 1 bar**

Ingredients:

One (1 ounce) package raspberry flavored sugar-free gelatin
 1/4 cup hot water
 2 tablespoons sugar-free strawberry syrup
 1 cup (8 fl oz) Mixed Berry
 Nepro® with Carb Steady™

Directions

1. In a small mixing bowl, combine the gelatin and hot water and whisk to dissolve. Stir in the strawberry syrup.
2. In a large mixing bowl, whisk together the Nepro with Carb Steady, gelatin mixture and mashed berries. Fold in the whipped topping.
3. Spoon the mixture into frozen bar molds or 5-ounce paper cups. Place a wooden stick or plastic spoon through the center of each mold or cup to create a handle.
4. Transfer the cups to a tray if necessary and freeze until firm, about 4 to 5 hours.
5. Release the bars from the molds or paper cups by dipping them into warm water for a few seconds. Serve immediately.

Serves: 8 • **Serving Size: 1 bar** • **Exchanges: 1/2 Starch, 1/2 High-Fat Meat** • **Carb Choices: 1/2**