

Crunch on This...A Fresh Look at Nuts for Renal Nutrition

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AS RENAL DIETITIANS, common questions our clients ask of us are “Can I eat this or that?” The answer depends on the nutrient composition of the particular food item in question. Nuts are often one of those foods on the “Can I” question. Unfortunately, these food items end up on the high potassium and/or high phosphorus food lists. However, nuts offer so much nutritionally. It should not be surprising to learn that Americans are adding more nuts to their diet.¹ Perhaps, we should take another look at this nutritional powerhouse.

Nuts are defined as a small dry fruit with a hard shell that grows on trees. Peanuts are an exception botanically as it is considered a legume, an edible seed enclosed in a pod. However, the use of peanuts in diet and cuisine more resembles that of nuts²; hence, it will be included in this article. Stone tools and such nuts as wild almond, acorns, and pistachios were discovered at an archaeological dig in Israel, demonstrating that nuts have been a part of man’s diet as far back as 780,000 years ago. Native Americans were cracking open nuts as far back as 4000 to 8000 years ago, and they were grounding the meat to make flour or nut butter.³ Nutritional value of each nut varies, but all provide protein, fiber, and a variety of vitamins and minerals.

Heart disease is the major cause of death for people with chronic kidney disease.⁴ Nuts have long been recognized for their heart health benefits. Since 2003, The Food and Drug Administration has recognized nuts, with the claim statement, “scientific evidence suggests but does not prove that eating 1.5 ounces per day of most nuts, as part of a diet low in saturated fat and cholesterol, may reduce the risk of heart disease.” They carried it a step further in 2004 with the claim statement specifying 1.5 ounces of walnuts, as part of a diet low in saturated fat and cholesterol may

reduce the risk of coronary heart disease.⁵ Walnuts are not the only nut getting attention. Researchers at Vanderbilt University and the Shanghai Cancer Institute examined nut and peanut intake and their role in reducing the mortality of cardiovascular diseases. They found that peanut consumption was associated with a 17% to 21% reduction in deaths and a 23% to 38% decrease in cardiovascular deaths. Their findings were significant in that the participants were from lower socioeconomic status. Peanuts are often regarded as a less expensive choice compared with tree nuts.⁶

Another example of nuts and heart health benefits is the PREDIMED (Prevencio con Dieta Mediterranea) study, which looked at the cardiovascular benefits of the Mediterranean Diet. The participants, identified at high risk for heart disease, were divided into three groups: a Mediterranean diet supplemented with 50 mL/day of extra virgin olive oil, a Mediterranean diet supplemented with 30 g of tree nuts (15 g walnuts, 7.5 g almonds, and 7.5 g hazelnuts), or a control diet that was low fat (American Heart Association guidelines). The participants received education and were monitored for almost 5 years. Following a Mediterranean diet, supplemented by nuts, reduced the risk of cardiovascular disease by 30% and specifically reduced the risk of stroke by 49%, compared to a low-fat diet. Olive oil also reduced the cardiovascular risk by 30%.^{7,8}

With all the heart health benefits, is it still wise to include nuts as part of a healthy eating plan for chronic kidney disease patients? Current guidelines restrict higher potassium and phosphorus foods in the diet. Recent studies have questioned the benefit of such restrictions whereas there is little data to support these beliefs.⁹ There has been emerging discussion to “liberalize” both potassium and phosphorus in an effort to increase fiber, antioxidants, and phytochemicals, while reducing the sodium and phosphate additive load.¹⁰ Nutrition counseling as it relates to phosphorus should focus more on the type of phosphorus, organic versus inorganic. Phytate, or myo-inositol 1,2,3,4,5,6-hexakis dihydrogen phosphate (InsP6), is a naturally occurring phosphorus compound found in nuts.¹¹ During digestion, there is <40% absorption rate of vegetable sources because most of the phosphorus is found as part of phytate, which must be hydrolyzed by phytase to be released and absorbed in the small intestine.¹⁰

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Table 1. NUT Nutrition Composition

Nutrient	Units	Almond	Brazil	Cashew	Hazelnut	Macadamia	Peanut	Pecans	Pine Nuts	Pistachio	Walnut
	Number of Kernels per Ounce	23	6	18	21	10-12	28	19 halves	167	49	14 halves
Calorie	Kcal	160	190	160	180	200	166	200	190	160	190
Protein	G	6	4	4	4	2	7	3	4	6	4
Total fat	G	14	19	13	17	22	14	20	20	13	18
Saturated fat	G	1	4	3	1.5	3.5	2	2	1.5	1.5	1.5
Monounsaturated fat	G	9	7	8	13	17	7	12	5.5	7	2.5
Polyunsaturated fat	G	3.5	6	2	2	0.5	2.8	6	10	4	13
Linoleic acid (18:2)	G	3.5	6	2	2	0.5	2.8	6	9	3.5	11
Linoleic acid (18:3)	G	0	0	0	0	0	0	0.5	0	0	2.5
Cholesterol	Mg	0	0	0	0	0	0	0	0	0	0
Carbohydrate	G	6	3	9	5	4	6	4	4	8	4
Fiber	G	4	2	1	3	2	2	3	1	3	2
Calcium	Mg	76	45	13	32	20	16	20	5	30	28
Iron	Mg	1.05	0.69	1.7	1.33	0.75	0.45	0.72	1.57	1.14	0.82
Magnesium	Mg	77	107	74	46	33	50	34	71	31	45
Phosphorus	Mg	136	206	139	82	56	103	79	163	135	98
Potassium	Mg	208	187	160	193	103	180	116	169	285	125
Sodium	Mg	0	1	5	0	1	2	0	1	2	1
Zinc	Mg	0.88	1.15	1.59	0.69	0.37	0.79	1.28	1.83	0.66	0.88
Copper	Mg	0.29	0.49	0.63	0.49	0.16	0.12	0.34	0.38	0.37	0.45
Manganese	Mg	0.62	0.35	0.23	1.75	0.86	0.59	1.28	2.5	0.35	0.97
Selenium	Mg	1.2	543.5	3.3	0.7	3.3	2.6	1.1	0.2	2.8	1.4
Vitamin C	Mg	0	0.2	0	1.8	0.2	0	0.3	0.2	0.9	0.4
Thiamine	Mg	0.06	0.18	0.06	0.18	0.2	0.04	0.19	0.1	0.2	0.1
Riboflavin	Mg	0.32	0.01	0.06	0.03	0.03	0.06	0.04	0.06	0.07	0.04
Niacin	Mg	1.03	0.08	0.4	0.51	0.65	4.1	0.33	1.24	0.39	0.32
Pantothenic acid	Mg	0.13	0.05	0.35	0.26	0.17	0.3	0.25	0.09	0.15	0.16
Vitamin B6	Mg	0.04	0.03	0.07	0.16	0.1	0.13	0.06	0.03	0.32	0.15
Folate	Mg	12	6	20	32	3	27	6	10	14	28
Choline, total	Mg	14.8	8.2	17.3	12.9	12.6	18.3	11.5	15.8	20.2	11.1
Betaine	Mg	0.1	0.1	n/a	0.1	0.1	0.1	0.2	0.1	0.2	0.1
Vitamin B12	Mg	0	0	0	0	0	0	0	0	0	0
Vitamin A	IU	1	0	0	6	0	0	16	8	73	6
Vitamin K	Mcg	0	0	9.8	4	0	0	1	15.3	3.7	0.8
Vitamin D	IU	0	0	0	0	0	0	0	0	0	0
Vitamin E											
Tocopherol, alpha	Mg	7.27	1.62	0.26	4.26	0.16	1.4	0.4	2.65	0.69	0.2
Tocopherol, beta	Mg	0.07	0	n/a	0.09	0	0.1	0.11	0	0.04	0.04
Tocopherol, gamma	Mg	0.18	2.23	n/a	0	0	1.79	6.93	3.16	6.68	5.91
Tocopherol, delta	Mg	0.02	0.22	n/a	0	0	0.17	0.13	0	0.15	0.54
Carotenoids											
Carotene, beta	Mcg	0	0	0	3	0	0	8	5	44	3
Carotene, alpha	Mcg	0	0	0	1	0	0	0	0	0	0
Cryptoxanthin, beta	Mcg	0	0	0	0	0	0	3	0	0	0
Lutein + zeaxanthin	Mcg	0	0	7	26	0	0	5	3	329	3

Selenium content of Brazil nuts, linoleic acid content of walnuts, pistachio's lutein + zeaxanthin content and Vitamin E content of almond and hazelnut.

All the nuts are unsalted: almonds, Brazil nuts, hazelnuts, pecans, pine nuts, and walnuts are unroasted; cashews, macadamias, and pistachios are dry roasted.

All information above, except for peanuts, is prepared by the International Tree Nut Council Nutrition Research and Education Foundation, March 2014. Their referenced source: USDA National Nutrient Database for Standard Reference.

Information on peanuts, all types, dry-roasted, without salt: <http://ndb.nal.usda.gov>. Accessed November 4, 2016.

Recent data has indicated that a dietary restriction in foods containing plant phosphates may compromise the adequate supply of nutrients that have a beneficial effect in preventing cardiovascular events, such as InsP6 and fiber, that is

found in nuts.¹¹ Experimental studies in animals and observational studies in humans suggest that InsP6 can possibly prevent vascular calcification.¹¹ More research is required, but it does appear promising.

Leading back to the original question, “Can I eat nuts?”, the answer will depend not only on the client’s specific need, but also the type of nut that could be used, as each one offers something different nutritionally (Table 1). Walnuts are the only nut with a significant amount of the omega 3 fatty acid, alpha-linolenic acid (2.5 g per 1 oz).¹² Pistachios contain the highest amounts of the phytochemicals lutein and zeaxanthin, which have been associated with a lower risk of some types of cancer.¹³ Almonds and hazelnuts are rich in Vitamin E, and one Brazil nut will provide all the selenium needed per day.¹⁴ Peanuts have a high protein content, with 7 g/oz. Nuts are often consumed as a snack; thus, education on appropriate portion sizes are crucial. However, nuts can be added into meal preparation, where a small amount can go a long way with flavor. Chopped walnuts and peanuts can be used as a coating for fish or poultry,¹⁵ not only adding crunchy texture but also increasing protein content. Another idea is to blend raw nuts with oil, vinegar or lemon, adding herbs for flavor. This will create a “sauce” which can be used for preparing foods or even used as a salad dressing.¹⁴ Any way you “shell” it out, a controlled amount of nuts can be added to a diet for kidney disease.

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