

Nutritional value and health benefits of nuts

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Abstract:

Nuts play a very significant role in human health and prevent many diseases. The nuts are rich source of unsaturated fatty acids, protein, vitamins, minerals and antioxidants. No doubt they are important part of our diet but the overeating of nuts in an undesirable form will led to serious health hazards. This article along with the nutritional and health benefits of consuming nuts also covers the recommended quantity of nuts to be consumed and the form in which the nuts should be included in daily diet.

Introduction

Nuts form a significant part of everyday diet for most of us and many public health organisations recommend daily intake of nut as part of an overall healthy diet. They are not just delicious but are powerhouse of energy, as they are loaded with calories. They are rich in healthy monounsaturated and polyunsaturated fats, protein and dietary fibre. Monounsaturated fatty acids helps to lower low density lipoproteins (LDL) or “bad cholesterol” and increase high density lipoproteins (HDL) or “good-cholesterol” in the blood. Nuts are also a good source of vitamins especially E and B-complex group along with minerals like calcium, potassium, phosphorus, magnesium, iron, zinc and antioxidant minerals such as manganese, copper and selenium, plus other phytochemicals such as antioxidant compounds and plant sterols. Nuts contain a wide variety of

health benefits, they improve heart, blood, mental, eye, skin, bone and oral health, further, they improve digestive function, memory and metabolism, boost immune system, aid in weight loss, help manage diabetes, prevent different type of cancer, lower the risk of formation of gallstones, protect against viral and fungal infections. Thus we can say nuts are little factories of good health or are a “complete package” type of food. But you can enjoy too much of a good thing. Despite a number of health benefits, overindulging of nuts also can have adverse effects.

Why we have to go for nuts?

Almonds:

Can a high fat food be good for you? Almonds challenge this oxymoron perfectly well. Almonds are known as an all-rounder. They are high in heart protective monounsaturated fats, which are also good for brain and skin health.

The high amount oleic acid, a monounsaturated fatty acid reduce blood pressure and helps to fight against coronary diseases. Almonds contain more **fibre** (12.5g/100g; about 33% of DRA), **protein** (21.15g/100g), **Vitamin E** (alpha-tocopherol-25.63mg/100g; about 170% of DRA of Vitamin E), **riboflavin** (1.138/100g; 87.5% of DRA) and **Ca** (269mg/100g; about 27% of DRA) compared to other nuts. Fibre seems to reduce the risk of developing diabetes, heart disease, diverticular disease, colon cancer and constipation. Protein helps in growth and repair of body organs. Vitamin E, is a strong lipid-soluble antioxidant with so many cancer-fighting properties and is reduce risk of heart diseases, further it helps in maintaining and protecting the skin from harmful oxygen-free radicals. Riboflavin in almonds is necessary for proper iron absorption. Apart from riboflavin they also contain phenylalanine and these two substances improve neurological function. In other words, almond boost brain power, and that is why it is the most beneficial for growing children. It is also a component of several antioxidant enzymes that prevent free radical damage in body and for that reason, they are known as best nut for disease prevention.

Walnuts:

Walnuts are very high in **polyunsaturated fats** (47.174g/100g) and are a good source of proteins, vitamin B-6 and folate. They are only nuts that have omega-3 fatty acid in high amount and because of that it is very good for vegetarians, as it is almost absent in a veggie diet. It provide anti-inflammatory benefits in asthma, rheumatoid arthritis, and other skin disease related to

inflammation like eczema and psoriasis, and therefore, they are known as an Inflammation fighters. Moreover, because of high in omega-3 they are also known as a brain food as nearly 60 per cent of our brain structures are primarily omega-3 fatty acids. Apart from this omega-3 fatty acid prevents erratic heart rhythms and regulates plaque formation in blood vessels, meanwhile amino acid arginine from walnut, makes arteries more flexible thereby reduce the chances of developing blood clots and for that reason walnuts are known as best nut for heart. Walnuts can lower the cholesterol level and boost the immune system as they contain antioxidants nutrients like phenols, Vitamin E, gallic acid and ellagic acid. Eating of walnuts soaked in water before sleep induces a good night's sleep as they contain melatonin-antioxidant.

Cashew nuts:

Cashew nut are highest in **copper** (2.195mg/100g; about 244% of DRA) iron **Fe** (6.68mg/100g; about 83.5% of DRA) among nuts. Both copper and iron are active compound of red blood cells and are required for the proper functioning and creation of red blood cells. Copper helps in the metabolism of iron and iron helps prevent microcytic-anemia. Further, copper is vital in energy production and to increase flexibility in blood vessels, bones and joints. Cashew nuts prevent cancer as it is rich source of antioxidant that helps in elimination of free radicals. Moreover, they have lower fat content than most other nuts.

Pistachio nuts:

Pistachios are symbol of wellness and they are known as the skinny nut because they are the lowest calorie nut. They are excellent source of vegetable protein. As

compared to most of nuts pistachios contain higher protein and lower fat. They are rich source of many anti-oxidant phyto-chemical substances such as carotenes and polyphenolic antioxidant compounds as well as amino acid arginine. Among the nuts pistachios are richest in **potassium** (1025mg/100g; about 22% of DRA), **vitamins A** (516IU/100g) and **vitamin B-6** (1.7mg/100g; about 130% of DRA). Potassium helps to maintain the correct water balance in the nerves and muscles cells thus it is important to keep muscles and the nervous system functioning normally. Further, Potassium helps counter hypertensive action of sodium, lower heart rate and blood pressure.

Pecan nuts:

Pecans are excellent source of phenolic anti-oxidant, thiamine, zinc, copper and richest among nuts in **vitamin E** (gamma-tocopherol-24.44mg/100g; about 163% of DRA of Vitamin E). In addition pecans are rich in phyto-chemical substances including antioxidant ellagic acid, zeaxanthin and beta-carotene. Research studies suggest that these compounds help to the body to remove toxic oxygen-free-radicals and as a result, protect body from diseases and cancers. They are good for men's health as they are rich in beta-sitosterol, a plant steroid that may help relieve symptoms of benign prostatic hyperplasia or enlarged prostate.

Hazelnuts or filberts:

Hazelnuts are highest in **folate** (113µg/100g; about 28% of DRA) among nuts and hence, hazelnuts help to reduce the level of homocysteine, which causes fatty plaque build-up in arteries. Furthermore, folic acid is essential in

preventing any kind of abnormalities in infants.

Macadamia Nuts:

Macadamia nuts contain highest **fat** content (75.77mg/100g) among nuts, yet are known as the superior nut as they are lowest in polyunsaturated fatty acids (1.502mg/100g) and richest in **monounsaturated fatty acids** (58.877mg/100g) compared to other nuts. They are highly anti-inflammatory nuts. Moreover, they are very low in anti-nutrients like phytic acid and perhaps low in lectins. Additionally they are richest source of **thiamine** (1.195mg/100g; about 99.5% of DRA) among nuts. Thiamine from macadamias strengthens your immune function, contributes to cardiac health, and studies have lately linked its supply to improved eye health as well as improved mental health.

Brazilnuts:

Among the nuts, brazilnuts are an excellent source of minerals like **phosphorus** (725mg/100g; about 103.5% of DRA), **magnesium** (376mg/100g; about 89.5% of DRA) and exceptionally rich in **selenium** (1917µg/100g; about 3485% of DRA). Magnesium helps the body to cope with stress, improve memory and protects against age-related memory loss. Moreover, it can help avoid heart attacks and vital for healthy development of muscles, tissues, bones and organs in body. Phosphorus increase strength and durability of bones and teeth. It also aids in protein synthesis, absorption of fats and carbohydrates. Selenium is very important nutrient that is lacking in diet of many people's. It is crucial antioxidant, which play an important role in the functioning of thyroid gland and adequate

selenium in the diet help prevent coronary artery disease, prostate cancer and liver cirrhosis.

Pine nuts:

Pine nuts are richest source of **zinc** (6.54mg/100g; about 59.4% of DRA), **manganese** (8.802mg/100g; about 382.6% of DRA), **niacin** (4.387mg/100g; about 27.4% of DRA) and **vitamin K** (53.9µg/100g; about 45% of DRA). Zinc is critical to immune health and healthy vision. Further, it is very important during pregnancy for the growth of the baby and the developmental years of childhood to maintain stable state of the body. Manganese contributes to bone health and strength, and is valuable antioxidant preventing free radical damage. It is also play important role in absorbing other nutrients such as thiamin, biotin or ascorbic acid. In addition they are also very good source of arginine amino acid.

Chestnuts:

Chestnuts stand out from other edible nuts for their distinctive nutrition profile. They are considered as real nut and are starchy instead of fatty. They are very low in fat (2.26g/100g) and beneficial as a source of carbohydrate (45.54g/100g). Carbohydrate helps in growth and development of body tissue. Moreover, they are exceptionally rich in Vitamin C (43mg/100g, about 72% of DRA). Which is a strong anti-oxidant and is needed for matrix formation in blood vessels, bones and teeth. On the other hand chestnuts are low in anti-nutrients like phytic acid.

Reasons to say no to nuts:

Nuts are healthy, tasty, delicious, packed with nutrition, easy to carry and it is easy to go nuts over nuts. But it is best to proceed with caution when it comes to nuts because of a few reasons:

1. Bad omega-6 to omega-3 ratio

The problem comes to most nuts is the high amount of polyunsaturated fat (PUFA) especially omega-6 fatty acid, as in high amount any kind of PUFA even omega-3s become highly reactive and toxic. Among the different nuts walnut and pine nuts are very high, brazilnuts and pecans are high, almond and pistachios are moderately high, hazelnuts and cashews are moderately low, macadamia is low and chestnut are very low in PUFA content. Omega-6 and omega-3 are essential fatty acids and are necessary for health, but the body cannot make them, meaning we must get them from foods we eat. It is impossible to say that omega-3 is better than omega-6, because both are essential, however omega-6 is by far the easiest nutrient to consume, but omega-3 found very low in nuts and other food. Fish and seafood are only a good source of omega-3 fatty acid, they gets it from an algae diet and up the food chain, somewhat omega-3 we can get from grass fed ruminants.

Table:1 Nutritive values of nuts per 100 gram.

| Nutrients | Almonds | Walnuts | Cashews | Pistachio | Pecans | Hazelnuts | Macadamias | Brazil-nuts | Pine nuts | Chest-nuts | RDA/d (31-50 yr.) |
|------------------------|--------------|---------------|--------------|-------------|--------|-----------|---------------|---------------|--------------|--------------|-------------------|
| Water (g) | 4.14 | 4.07 | 5.20 | 4.37 | 3.52 | 5.31 | 1.36 | 3.42 | 2.28 | 48.65 | 3.7 L |
| Energy (kcal) | 579 | 654 | 553 | 560 | 691 | 628 | 718 | 659 | 673 | 213 | - |
| Protein (g) | 21.15 | 15.23 | 18.22 | 20.16 | 9.17 | 14.95 | 7.91 | 14.32 | 13.69 | 2.42 | 56 g |
| Carbohydrates (g) | 21.55 | 13.71 | 30.19 | 27.17 | 13.86 | 16.70 | 13.82 | 11.74 | 13.08 | 45.54 | 130 g |
| Dietary fiber (g) | 12.5 | 6.7 | 3.3 | 10.6 | 9.6 | 9.7 | 8.6 | 7.5 | 3.7 | 8.1 | 38 g |
| Total Sugars (g) | 4.35 | 2.61 | 5.91 | 7.66 | 3.97 | 4.34 | 4.57 | 2.33 | 3.59 | - | - |
| Total lipids (fat) (g) | 49.93 | 65.21 | 43.85 | 45.32 | 71.97 | 60.75 | 75.77 | 67.10 | 68.37 | 2.26 | - |
| SFA (g) | 3.802 | 6.126 | 7.783 | 5.907 | 6.180 | 4.464 | 12.061 | 16.134 | 4.899 | 0.425 | - |
| MUFA (g) | 31.551 | 8.933 | 23.797 | 23.257 | 40.801 | 45.652 | 58.877 | 23.879 | 18.764 | 0.780 | - |
| FUFA (g) | 12.329 | 47.174 | 7.845 | 14.380 | 21.614 | 7.920 | 1.502 | 24.399 | 34.071 | 0.894 | - |
| Phosphorus (mg) | 481 | 346 | 593 | 490 | 277 | 290 | 188 | 725 | 575 | 93 | 700 mg |
| Potassium (mg) | 733 | 441 | 660 | 1025 | 410 | 680 | 368 | 659 | 597 | 518 | 4.7 g |
| Calcium (mg) | 269 | 98 | 37 | 105 | 70 | 114 | 85 | 160 | 16 | 27 | 1000 mg |
| Magnesium (mg) | 270 | 158 | 292 | 121 | 121 | 163 | 130 | 376 | 251 | 32 | 420 mg |
| Iron (mg) | 3.71 | 2.91 | 6.68 | 3.92 | 2.53 | 4.70 | 3.69 | 2.43 | 5.53 | 1.01 | 8 mg |
| Zinc (mg) | 3.12 | 3.09 | 5.78 | 2.20 | 4.53 | 2.45 | 1.30 | 4.06 | 6.54 | 0.52 | 11 mg |
| Manganese (mg) | 2.179 | 3.414 | 1.655 | 1.200 | 4.500 | 6.175 | 4.131 | 1.223 | 8.802 | 0.952 | 2.3 mg |
| Copper (mg) | 1.031 | 1.586 | 2.195 | 1.300 | 1.2 | 1.725 | 0.756 | 1.743 | 1.324 | 0.447 | 900µg |

| Nutrients | Almonds | Walnuts | Cashews | Pistachio | Pecans | Hazelnuts | Macadamias | Brazil-nuts | Pine nuts | Chest-nuts | RDA/d (31-50 yr.) |
|-----------------------------------|--------------|---------|-----------|--------------|--------------|------------|--------------|---------------|--------------|-------------|-------------------|
| Selenium (µg) | 4.1 | 4.9 | 19.9 | 7.0 | 3.8 | 2.4 | 3.6 | 1917.0 | 0.7 | - | 55 µg |
| Sodium (mg) | 1 | 2 | 12 | 1 | 0 | 0 | 5 | 3 | 2 | 3 | 1.5 g |
| Vitamin A (IU) | 2 | 20 | 0 | 516 | 56 | 20 | 0 | 0 | 29 | 28 | 900 µg |
| Vitamin C (mg) | 0.0 | 1.3 | 0.5 | 5.60 | 1.1 | 6.3 | 1.2 | 0.7 | 0.8 | 43.0 | 90 mg |
| Thiamine (mg) | 0.205 | 0.341 | 0.423 | 0.870 | 0.660 | 0.643 | 1.195 | 0.617 | 0.364 | 0.238 | 1.2 mg |
| Riboflavin (mg) | 1.138 | 0.150 | 0.058 | 0.160 | 0.130 | 0.113 | 0.162 | 0.035 | 0.227 | 0.168 | 1.3 mg |
| Niacin (mg) | 3.618 | 1.125 | 1.062 | 1.300 | 1.167 | 1.800 | 2.473 | 0.295 | 4.387 | 1.179 | 16 mg |
| Vitamin B-6 (mg) | 0.137 | 0.537 | 0.417 | 1.700 | 0.210 | 0.563 | 0.275 | 0.101 | 0.094 | 0.376 | 1.3 mg |
| Folate, DFE (µg) | 44 | 98 | 25 | 51 | 22 | 113 | 11 | 22 | 34 | 62 | 400 µg |
| Vitamin E (alpha-tocopherol) (mg) | 25.63 | 0.70 | 0.90 | 2.86 | 1.40 | 15.03 | 0.54 | 5.65 | 9.33 | - | 15 mg |
| Vitamin E (gamma-tocopherol) (mg) | 0.64 | 20.83 | 5.31 | 20.41 | 24.44 | 0.00 | 0.00 | 9.56 | 11.15 | - | |
| Vitamin K (phylloquinone) (µg) | 0.0 | 2.7 | 34.1 | - | 3.5 | 14.2 | - | 0.0 | 53.9 | - | 120 µg |

SFA: Total saturated fatty acid, MUFA: Monounsaturated fatty acid, PUFA: Polyunsaturated fatty acid.

(Source: USDA National Nutrient Database; RDA: Food and Nutrition Board, Institute of Medicine, National Academies)

Along with omega-3 fatty acids, omega-6 fatty acids play an important role in brain function, and normal growth and development. Omega-6s help, maintain bone health, regulate metabolism, maintain the reproductive system and hair growth. Whereas, omega-3 fatty acids may be important in preventing many health problems, including heart disease, rheumatoid arthritis, and cancer. Furthermore they are also play a role in improving mood, sharpening memory and improving night and color vision. But massive consumption of omega-6 promotes cancer, heart disease, autoimmune disorders including arthritis, diabetes, allergy and asthma. Omega-6 fats are primarily converted into a range of pro-inflammatory hormones and omega 3 into anti-inflammatory hormones, therefore, too much omega-6 and too little omega-3 can lead to excessive inflammation and for that reason, a healthy balance between omega-6 and omega-3 fatty acids in needed to bring these diseases under control.

In an effort to optimize health and longevity, one should strive to keep a total PUFA intake under 4 per cent of total calories. However, in respect to ideal ratio of omega-6 and omega-3 scientists have different view some suggest it should be 5:1, whereas some suggest 4:1 and some even say it should be 1:1. Almost all nuts are known for their bad omega-6 and omega-3 ratio. Most nuts contain very high amount of omega-6 and very low amount of omega-3. Among nuts walnuts often praised for their high omega-3 content, but are way too high in total PUFA and still have a bad omega-6 to omega-3

ratio. And even nuts contain appreciable level of omega-3 fat are not necessarily a good source of omega-3 as the form of omega-3 found in nuts is alpha-Linolenic acid (ALA) which is a short-chain form that needs to be elongated ALA to DHA to be useful for body. ALA can be elongated to eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), but the process is very inefficient.

Table:2 Comparison of omega-6 and omega-3 fatty acids in nuts

| Nuts | Omega-6 (g) | Omega-3 (g) | Omega-6/Omega-3 ratio |
|-----------------|-------------|-------------|-----------------------|
| Almonds | 12 | 0.006 | 2000:1 |
| Walnuts | 38 | 9 | 4.22:1 |
| Cashew nuts | 7.78 | 0.06 | 129.6:1 |
| Pistachios | 13.2 | 0.25 | 52.8:1 |
| Pecans | 20.6 | 1 | 20.6:1 |
| Hazelnuts | 7.8 | 0.1 | 78:1 |
| Macadamias nuts | 1.3 | 0.2 | 6.5:1 |
| Brazilnuts | 20.5 | 0.018 | 1138.8:1 |
| Pine nuts | 33.6 | 0.11 | 305.45:1 |
| Chestnuts | 0.776 | 0.093 | 8.23:1 |

(Source: <http://paleoleap.com/are-nuts-and-seeds-healthy/>)

2. High in phytic acid

The other problem when it comes to most nuts is the presence of phytic acid in them. Phytic acid is the storage form of phosphorus and, especially found in skin of nuts. Phytic acid is a strategy employed to prevent nut from sprouting before the ideal conditions are present

but human's body are not able to digest phytic acid and is known as anti-nutrient as in our digestive system. It has the ability to bind to certain minerals like calcium, iron, zinc, manganese and magnesium and prevents us from absorbing them. Here it is important to know that phytic acid does not leach minerals that are already stored in the body; it only inhibits the absorption of minerals from food in which it is present. This means that you would not necessarily get high amount of a mineral even if you eat a nut high in that mineral and, because of that diet with high in phytate cause mineral deficiencies (when phytic acid is bound to a mineral in the nut, it's known as phytate). Moreover, phytic acid interferes with enzyme required for digestion of food, including amylase (needed for the breakdown of starch), pepsin (required for the breakdown of protein in stomach), and trypsin (required for protein digestion in small intestine). However, these same anti-nutrient properties of phytic acid can also help in the prevention of chronic disease. Now question is arise how much phytic acid we eat. According to Kresser (2016), human can tolerate phytic acid in the rage of 100 mg to 400 mg per day.

Table:3 Comparison of phytic acid present in some most popular nuts

| Nut | Phytic acid (mg/100g) |
|-----------------|-----------------------|
| Black walnuts | 1977 |
| Cashews | 1866 |
| Hazelnuts | 1620 |
| Almonds | 1280 |
| English walnuts | 760 |
| Chestnuts | 47 |

(Source: <http://www.phyticacid.org/phytic-acid-in-nuts/>)

3. Lectins in nuts

Lectins are a type of protein that can bind to cell membrane and are meant to protect the plants. Lectins generally found in the part of the nut that becomes the leaves when the plant sprouts, but also on the skins. They are resistant to human digestion and they enter the blood unchanged. Lectins can irritate gut lining and create inflammation.

4. Selenium Poisoning:

Selenium is a trace mineral and our body only needs in small amounts. The excess of selenium intake will led to serious health issues. The common symptoms of selenium poisoning are hair fall, nails become brittle, breath stinks and muscles and joints pain. According to Braba (2015) 8 whole pieces of brazilnuts, has 10 times recommended daily amount of selenium (55 micrograms).

5. Oxalates in nuts:

Almonds and cashews both contain oxalates, which interfere with the absorption of calcium and, the accumulation of calcium can result in kidney stones. People with kidney or gallbladder stone problems should avoid eating almonds.

6. Medication Interaction:

Pine nuts, hazelnuts, pecans, macadamias and walnuts are fairly high in manganese (about 382.6, 268, 195, 179 and 148 per cent of DRA/100g respectively) and if we consume too much these nuts on top of a manganese rich diet, this might trigger drug interactions. High quantities of manganese in blood can interfere with

some antipsychotic drugs, as well as antacids, laxatives blood pressure medications and certain antibiotics.

7. Allergy:

Sometimes tree nuts (especially cashews, walnuts, pistachios and chestnuts) incline to be an extremely allergenic substance and it can be manifested in a variety of ways. Being allergic to nuts varies from one another so you must be careful whenever you add new type of nut in your diet. Allergic reactions caused by these nuts can be mild to severe and include heart arrhythmia, respiratory malfunction, skin and facial irritation, gastrointestinal discomfort etc. For example allergy from cashews can lead to one or more of the complications like contact dermatitis, vomiting, nausea, diarrhea, gastric discomfort, runny nose, coughing, shortness in breath and more severe reactions can result in a fatal condition like glottis edema or anaphylaxis.

8. Weight gain

Nuts are high in fat and high fat means high calories. However, most of the fat is unsaturated and helpful in lowering cholesterol and many research studies have shown that nut can help to lose weight if eat in moderate amount. But, if you eat more than daily recommended, you can gain weight more rapidly than you might by over-eating other food.

9. Gastrointestinal Problems:

Some time people felt gassy and bloated after eating nuts, it is a common side effect of overeating of nuts as compounds in nut called phytates and tannins make them difficult to digest. Moreover, according to Alan R. Goby, author of Nutritional Medicine, eating

too much fat found abundantly in nuts at one time can lead to diarrhea. Further, nuts are high fibre food and we need fibre to aid digestion but consuming large quantity of fibre also can lead to bloating, gas and diarrhea. For adult the recommended dietary allowance of fiber is 38 grams.

Table: 4. Presence of fibre content in different nuts

| Nuts | Total dietary fibre (g/100g) |
|----------------|------------------------------|
| Almonds | 12.5 |
| Walnuts | 6.7 |
| Cashews | 3.3 |
| Pistachio | 10.6 |
| Pecans | 9.6 |
| Hazelnuts | 9.7 |
| Macadamia nuts | 8.6 |
| Brazilnuts | 7.5 |
| Pine nuts | 3.7 |
| Chestnuts | 8.1 |

(Source: USDA National Nutrient data base)

10. Blood Pressure:

Nuts are often served salted. This improves taste, but also adds salt to your diet. Too much salt can contribute to high blood pressure.

Step should be taken to make nuts safer to eat:

- Polyunsaturated fatty acids (PUFA) are easily oxidized when comes in contact with oxygen, light and heat, and oxidized PUFAs are bad for our health because they create many kind of toxic reactions with sugars and proteins in our bodies. For this reason nuts are much better eaten unroasted and should be refrigerated in an air-tight container.
- Many studies suggest that at least some of phytate can be broken down

by soaking, roasting and cooking. Soaking and cooking also reduce lectins content in them. According to Gargi Sharam the brown peel of almonds contains tannin which inhibits nutrient absorption and once you soak almonds the peel comes off easily and allows the nut to release all nutrients easily. Meanwhile, soaking almonds releases enzyme lipase which is beneficial for digestion of fats. Soaking of nuts for sixteen to eighteen hours in normal or salty water is an easy way to get rid of most of the phytic acid and other anti-nutrients. After the nuts have soaked for number of hours, rinse the thoroughly and dry them at very low temperature (either in a food dehydrator or at low temp. oven) and then roasting or cooking the nuts would likely eliminate a large portion of the phytic acid. You don't absolutely need to dry the soaked nuts, but the moisture still make it easy for mold to grow, so they should be eaten quite quickly.

- Remove skin of nuts before eating or eat blanched nuts for proper digestion of them as fair amount of lectins and phytic acid present in skin of nuts.
- Before adding any new nut in your diet make it sure that you do not have any allergy from that particular nut.
- If you add nuts in your diet, the equivalent amount of calories elsewhere should be subtracted, otherwise you will gain weight more quickly.

How much is too much

Too much of anything is bad. How much is too much depends on context. It depends on several factors such as body weight, overall health, mineral status, metabolic health. It also depends upon in which form the nuts are consumed, whether soaked, dehydrated and roasted. Most studies recommended 28-30 g nuts per day or even 2-5 times in a week. Recommended nuts (28-30g) contain approximately 20-24 almonds, 8-12 walnuts (halves), 30-45 pistachios, 5-7 Brazilnuts, 16-20 pecans (halves), 14-18 cashews, 18-20 hazel nuts, 14-16 macadamia nuts, 3-4 chestnuts and 140-160 pine nuts. However, it is better to consume mixed nuts to avoid adverse effect of consuming one nut and to get proper balance of different nutrients in your diet and by doing so you can enjoy variety of different kinds of nuts, further, some nuts better than others when it comes to health benefits. Sharma (2016) has recommended 4 to 5 cashew nuts and 8 to 10 soaked almonds every day". Whereas, Makhija (2015) recommended 4-7 almond and 3-4 halves walnut per day. Further, Francis (2016) mentioned that consuming 5-7 pistachios per day are healthy. Joel Fuhrman has recommended eating 4 Brazilnuts per day.

CONCLUSION

Even if nuts are often loaded with vitamins and minerals, most nuts should be kept to a minimum in a healthy diet for a few reasons. Most of the nuts contain high amount of PUFA and very bad ratio of omega-6 and omega-3. They also contain phytic acid that binds certain mineral and block their

absorption in the body. Further they contain lectins that can irritate the gut lining. Among different nuts Brazilnut is extremely high in selenium and too much eating of Brazilnuts leads to selenium poisoning. Furthermore, overeating of nuts can increase weight and create gastrointestinal problem. However, by some extent we can reduce the toxic load of most of nuts by storage of nuts in air tight containers and by soaking, roasting, cooking and removing skin of nuts before consuming. Eat nuts because they have lot to offer, but, it is best to proceed with caution and stick to the recommended daily serving size.

REFERENCES

- Are nuts and seeds healthy?
<http://paleoleap.com>.
- Braba, K. (2015). 'Surprisingly bad things that can happen if you eat too many nuts'.
<http://www.prevention.com/food/what-happens-if-you-eat-too-many-nuts>
- Francis, R. (2016). 'The Nutty Affair: Which Nuts Should You Have Daily and How Many?'
<http://food.ndtv.com/opinions/the-nutty-affair-just-how-much-of-these-nuts-should-you-be-eating-779321>
- Global Report (2009). How micronutrients affect human health. In: Investigating in the future. A united call to action on mineral and vitamin deficiency.
<http://www.unitedcalltoaction.org>.
- Kresser, C. (2011). 'Another reason you shouldn't go nut on nuts'.
<https://chriskresser.com/another-reason-you-shouldnt-go-nuts-on-nuts/>
- Makhija, P. (2015). 'Here's how much you should eat dry fruits'.
<http://timesofindia.indiatimes.com/lifestyle/health-fitness/diet/Heres-how-much-you-should-eat-dry-fruits/articleshow/46734753.cms>
- Myers, C. (2014). The effect of overeating nuts.
<http://www.livestrong.com/article/410236-the-effects-of-overeating-nuts/>
- Ramaswamy, M. Benefit of 6 common nuts and dry fruits.
<http://www.medimanager.com/my-diet/articles/benefits-of-6-common-nuts-and-dry-fruits.aspx>
- Sharma, G. (2016). Why soaked almonds are better than raw almonds.
<http://food.ndtv.com/opinions/why-soaked-almonds-are-better-than-raw-almonds-726909>
- Simopoulos, A.P. (2002). The importance of the ratio of omega-6/omega-3 essential fatty acids. *Biomed Pharmacother*, **56** (8): 365-379. <https://www.ncbi.nlm.nih.gov/pubmed/12442909>
- USDA (2016): National Nutrient Database for standard reference. 28: May, 2016
<https://ndb.nal.usda>.