



Pumpkin seeds– a byproduct : Plentiful of health and nutrition

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Introduction: Pumpkins are indigenous to the Americas sometimes called “pepitas”. Pumpkins and pumpkin seeds belong to the *Cucurbitaceae* family. The most common species of pumpkin used for its seeds are *Cucurbita maxima*, *Cucurbita pepo*, *Cucurbitamixta* and *Cucurbita moschata*. India is the second largest producer of pumpkin. It is used for cooking purpose and for making sweets. Later, pumpkin seeds are discarded during processing. These seeds go as waste in cattle feed and only little amounts are eaten after being salted and roasted. Present days much attention has been given to the usage of vegetable by-products having emerging bioactive compositions that promote health and human life. So, it gives new opportunity to explore the nutritional aspects of pumpkin seeds that can renovates a by-product into a versatile “Nutrition powerhouse”.

Description: Pumpkin seeds are edible seeds, flat, oval-shaped green seeds (when shelled). After removing them from the flesh of a pumpkin, they can be washed and typically roasted with oil and spices to prepare crunchy healthful snack. Roasted or unroasted, shelled or unshelled, pepitas are a fantastic snack food with nutritional and health benefits. The best feature is their versatility *i.e.* they are good as a snack, a salad topping, an added crunch to bakery products, or even an ingredient in desserts and confectionary products.

Nutrition: Pumpkin seeds are renowned for their nutritional benefits. They are excellent sources of potassium, magnesium and calcium. Also, they are good source of polyunsaturated fatty acids (PUFAs) and antioxidants. The fatty acids contain a range of sterols,



squalene and tocopherols. Although they are small, but the seeds are little power houses of nutrients with plentiful health benefits. Like nuts, pumpkin seeds are good source of protein and unsaturated fats, including omega-3. They also contain a wide range of other nutrients like iron, selenium, calcium, B vitamins and β -carotene (precursor of vitamin A). The biggest claim to fame of pumpkin seeds is that they are an excellent natural source of magnesium and zinc. Just one tablespoon of pumpkin seeds provides almost 1mg zinc (RDA is 9.5mg for men and 7mg for women) and 40mg magnesium (RDA is 300mg for men and 270mg for women). Our body depends on magnesium for efficient metabolism, creation of antioxidants and the transport of ions. Magnesium is mainly renowned for its role in cardiovascular health. Getting enough magnesium has been shown to lower blood pressure and reduces cardiovascular disease risk.

According to the United States Department of Agriculture (USDA) a 100-g serving of pumpkin seeds contains:

- 127 calories
- 15 g of carbohydrate
- 17.9 g of fibre
- 5 mg of protein
- 21.43 g of fat, of which 3.57 is saturated
- 20 mg of calcium
- 0.9 g of iron
- 7.99 mg of zinc
- 9.76 mg of iron
- 78.18 mg of calcium
- 90.69 mg of magnesium
- 20.56 mg of sodium.

Health benefits of pumpkin seeds: Pumpkin seeds provides innumerable health-benefits shown in Fig.1.

Heart health: Pumpkin seeds are a rich source of antioxidants, magnesium, zinc and fatty acids that are excellent for healthy heart. Moreover, it also contain monounsaturated fatty acids (alpha-linolenic acid) that help

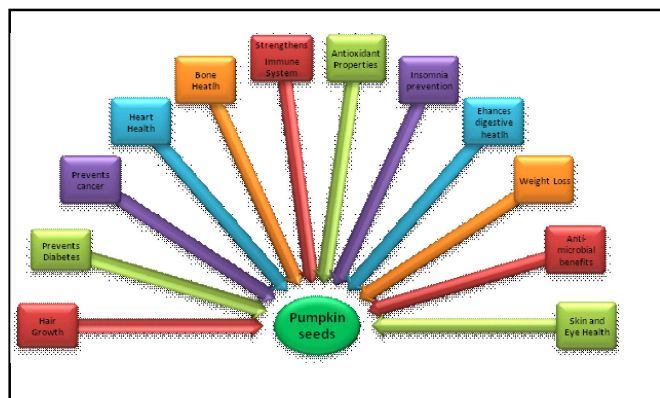


Fig. 1: Pumpkin seeds provides innumerable health-benefits

to reduce bad cholesterol levels and increase the good cholesterol levels in the blood. Plenty of evidences are available which indicate that because of ALA content, eating pumpkin seeds can be beneficial for the heart and in the prevention of cardiovascular disease. The combination omega-3 and omega-6 fatty acids, antioxidants and fibre has benefits for both the heart and liver. Presence of fibre in pumpkin seeds aids in lowering the total amount of cholesterol in the blood and decrease the risk of heart disease. Plant sterols and phytosterols present in pumpkin kernel help to reduce levels of “bad” LDL cholesterol. Due to excellent source of omega-3 fatty acids, it makes best choice of vegetarians for getting these benefits in their diet.

Cancer: It is evident that there are no single ‘superfoods’ that can prevent cancer but, there is evidence that eating a healthy diet can reduce the risk of cancer. Pumpkin seeds are a good source of antioxidants, that help to scavenge ‘free radicals’ mostly responsible for damaging cells. After menopause, levels of estrogen drop which in turn leads to hot flashes, headaches and other menopausal symptoms. Naturally occurring phytoestrogens in pumpkin seeds is known to mimic the effects of estrogens in the brain and body. Hence, reduces the risk of menopausal symptoms, cardiovascular disease and cancers (such as breast cancer) that are hormone-dependent. Some evidences suggested that the antioxidant properties of carotenoids, vitamin A and E found in pumpkin may protect against breast cancer.

Hair growth: The pumpkin seeds are known to have *Cucurbitin* (a type of amino acids) that are responsible for hair growth. Other micronutrients found in pumpkin seeds helps to improve the texture of the hair and make it strong.

Bone health: Pumpkin seeds are packed with

magnesium, which is important mineral needed for bone formation. High magnesium intake is associated with a greater bone density and help to decrease the risk of osteoporosis in women after menopause.

Diabetes: These humble seeds may also help people struggling to control their blood sugar levels and may help to protect against type 2 diabetes. Reactive oxygen species (ROS) play a role in the development of diabetes and antioxidants may help reduce the risk. The seeds are a good source of magnesium. Studies have suggested that for every 100 milligrams (mg) a day increase in magnesium intake, the risk of developing type 2 diabetes decreases by approximately 15 per cent. Low magnesium levels can impair insulin secretion and lower insulin sensitivity.

Weight loss and digestion: Pumpkin seeds are high in fibre that helps to maintain your weight and keeps you fuller for a longer period of time. Besides this, pumpkin seeds also enhance your digestive health.

Strengthens the immune system: Rich in antioxidants like carotenoids and vitamin E, pumpkin seed and seed oil can help to reduce inflammation and protect your cells from harmful free radicals. Vitamin E helps to strengthen the immune system and maintain healthy blood vessels. Therefore, dieticians recommend eating seeds as a source of vitamin E.

Insomnia prevention: Pumpkin seeds are excellent source of tryptophan. Tryptophan is an amino acid that has been used to treat chronic insomnia because the body converts it into serotonin, the “feel-good” or “relaxing” hormone, and melatonin, the “sleep hormone.” It has been suggested that having a few pumpkin seeds before bed, with a small amount of carbohydrates such as a piece of fruit, may be beneficial in providing our body with tryptophan needed for melatonin production.

Antioxidant properties: Being a source of cell-protective antioxidants, including carotenoids and vitamin E. The non-refined pumpkin seed oil is thought to offer antioxidant protection. This is due to its PUFA and lipophilic antioxidant content.

Skin and eye health: Pumpkin seeds are a good source of squalene (antioxidant) which plays an important role in protecting the skin during UV and other types of radiation exposure.

Antimicrobial benefits: Presence of lignans in pumpkin seeds (including Pinoresinol, Medioresinol and Lariciresinol) have also been shown to have antimicrobial and especially anti-viral properties.

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