

## SUPER FOODS FOR POSTMENOPAUSAL WOMEN

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### Abstract

To overcome the negative impact of menopausal symptoms on the health status of menopausal women various types of super foods are available in nature like seeds of fruits and vegetables and legumes. Soybean, flaxseeds, quinoa seeds, pumpkin seeds, chia seeds, sesame seeds, sunflower seeds, water melon seeds etc are some examples of such seeds. These seeds are rich source of various macro and micro nutrients like carbohydrate, protein, fat (Monounsaturated fatty acids, poly unsaturated fatty acids), vitamins, and minerals and are also good source of phytoestrogens which have estrogenic effect on health to some extent. According to Longvah *et al.*, (2017) and USDA (2018) 100 g soybean, flaxseeds, quinoa seeds, chia seeds, sesame seeds, sunflower seeds and water melon seeds contain 38, 19, 17, 22, 24, 28 g protein, 377, 444, 328, 486, 520, 586, 557 kilocalorie energy and 19, 36, 6, 31, 43.05, 52, 47.37g total fat, respectively. Hundred g soybean, flaxseeds, quinoa seeds, sesame seeds, sunflower seeds and water melon seeds contain 195, 257, 198, 631, 1283, 176 and 54 mg calcium, 1634, 655, 474, 460, 559, 648 mg potassium, respectively. Hundred gram soybean and flax seed contain 9754 and 3191 mg linoleic acid and 1318 and 12956 mg  $\alpha$ -linolenic acid, respectively and other seeds are also good source of poly unsaturated fatty acids. Due to presence of estrogen like properties and other nutrients the seeds called as super foods are highly required in the diet of the menopausal women.

**Key words:** Health, menopause, seeds, super foods, women

### Introduction

Women are an important part of the society and their contribution in enhancing the economy of any country cannot be avoided. In many developing countries women's health is limited only to their reproductive phase and many other dimensions of their health in later years are being overlooked. One such neglected phenomenon is menopause which occurred among women after the age of 45 years and it causes several physiological changes among them. After menopause the secretion of female hormone oestrogen diminished which in turn affects their quality of life by creating adverse menopausal symptoms like hot flushes, night sweats, sleep disturbances, poor memory, anxiety, depression, urinary tract infections etc. The risk of development of various metabolic syndromes like hypercholesterolemia, dyslipidemia, hypertension, cardiovascular diseases, diabetes, obesity, low bone mineral density etc becomes several times higher among postmenopausal women (Dogu *et al.*, 2015;

Perez *et al.*, 2009). Such menopausal changes affect their food consumption pattern and nutritional status. Foods rich in various nutrients like minerals (calcium, potassium, magnesium, iron, zinc, etc), fat and water soluble vitamins like vitamin D, K, C, beta carotene etc, complex carbohydrates, polyunsaturated fatty acids, phytoestrogens etc are highly recommended in managing menopause (Kaur and Kochar, 2015; Geeta *et al.*, 2013). Various types of foods are available in nature to overcome the adverse effects of menopause and some of them are considered as super foods.

1. **Soybean:** Soybean (*Glycine max*) is a legume belongs to Fabaceae family and it is a good source of various nutrients. One hundred gram soybean contains 38 g protein, 19 g total fat, 23 g total dietary fibre, 377 energy (kcal), 0.61 mg thiamine, 0.23 mg riboflavin, 2.28 mg niacin, 288 mg total folate, 195 mg calcium, 0.79 mg copper, 8.22 mg iron, 189 mg magnesium, 494 mg phosphorus, 1634 mg potassium, 3.47 mg zinc, 9754 mg linoleic acid, 1318 mg  $\alpha$ -linolenic acid (Longvah *et al.*, 2017) and 80.7 to 213.6 mg isoflavones (Genistein, Daidzein and Glycitein). Isoflavones act as female hormone estrogen in menopausal women and help in reducing menopausal symptoms (Mujic *et al.*, 2011) maintains blood lipid profile and improves bone mineral density (Somekawa *et al.*, 2001). It can be consumed in various forms like soybean sprouts, soy milk, tofu, soy sauce, natto, tempeh, soya chunk, or it can be used in developing various value added traditional products like *ladoo*, *sev*, *mathri*, etc by adding it in grind form with different cereals and pulses.
2. **Flax seeds:** Flaxseed is also called as linseed and it is obtained from the flax plant (*Linum usitatissimum*) which belongs to Linaceae family. The seeds are good source of various nutrients and 100 g seeds provide 18.55 g protein, 36 g total fat, 26.17 g total dietary fibre, 444 energy (kcal), 0.28 mg thiamin, 0.05 mg riboflavin, 1.09 mg niacin, 21.25  $\mu$ g biotin, 86.50  $\mu$ g total folate, 7.79 mg  $\alpha$ -tocopherol, 19.17 $\mu$ g vitamin K<sub>1</sub>, 257 mg calcium, 1.34 mg copper, 5.44 mg iron, 349 mg magnesium, 445 mg phosphorus, 655 mg potassium, 46.87  $\mu$ g selenium, 4.86 mg zinc, 3191 mg linoleic acid, 12956 mg  $\alpha$ -linolenic acid etc (Longvah *et al.*, 2017). Flaxseeds are good source of phytoestrogens namely lignans which act somewhat similar to the female hormone estrogen and helps in reducing the risk of low bone mineral density (Brooks *et al.*, 2004) along with menopausal symptoms like hot flashes, night sweats etc to some extent in menopausal women (Cetisli *et al.*, 2015). According to Rodriguez-Leyva *et al.* (2010) alpha-linolenic acid found in flax seeds helps in reducing the risk of various cardiovascular diseases by lowering total and bad cholesterol in the body.
3. **Quinoa seeds:** It is a pseudo cereal and belongs to Amaranthaceae family. According to Longvah *et al.* (2017) 100 g of quinoa seeds contain 13 g protein, 6 g total fat, 15 g total fibre, 54 g carbohydrate, 328 energy (kcal), 0.83 mg thiamine, 0.22 mg riboflavin, 1.70 mg niacin, 173  $\mu$ g total folate, 5.12  $\mu$ g  $\beta$ -carotene, 198 mg calcium, 0.48 mg copper, 7.51 mg iron, 119 mg magnesium, 212 mg phosphorus, 474 mg potassium, 7.81  $\mu$ g selenium, 3.31 mg zinc etc. Being a good source of bone forming, blood pressure and cholesterol controlling various nutrients, (Varli and Sanlier, 2016) it can be included in the diet in different forms like porridge, in salads, soups, in sprouted or grind form with other cereals by various age groups especially menopausal women.

- 4. Pumpkin seeds:** Pumpkin seeds are edible and also called as pepitas. These seeds are calorie-dense and good source of various nutrients like protein, dietary fiber, vitamins like riboflavin, folate, pantothenic acid, niacin etc, minerals like calcium, iron, zinc, manganese, magnesium, phosphorus, sodium and potassium, polyunsaturated fatty acids etc (United States Department of Agriculture (USDA) National Nutrient Database, 2018). It has been observed that high amount of magnesium and calcium present in pumpkin seeds is beneficial for postmenopausal women to decrease the risk of osteoporosis. Pumpkin seeds and their oil are also helpful in maintaining blood sugar level, lower cholesterol, helps in reducing weight etc which in turn assist in reducing the risk of various cardiovascular diseases and diabetes (Devi, *et al.*, 2018; Williams *et al.*, 2011). They can be consumed in roasted form or grind in flour and various nutritious healthy recipes can be prepared by supplementing it with other ingredients like cakes, biscuits, muffins, sprinkled on deserts, salads, smoothies etc (Syed *et al.*, 2019).
- 5. Chia seeds:** Chia seeds are obtained from the desert plant *Salvia hispanica*, a member of the mint family (Lamiaceae). They are good source of various nutrients and 100 g seeds provide 486 energy (kcal), 17 g protein, 31 g total fat, 34 g total dietary fibre, 8 mg iron, 631 mg calcium, 335 mg magnesium, 5 mg zinc, 0.62 mg thiamine, 0.17 mg riboflavin, 9 mg niacin, 54 International Unit (IU) Vitamin A, 24 mg PUFA, etc (Longvah *et al.*, 2017). Chia seeds are robust part of healthy diet by lowering various risk factors related to cardiovascular diseases and diabetes like high blood cholesterol, triglycerides, high blood pressure, obesity, high blood glucose etc. They can be eaten raw, roasted, or grind form, baked goods, nutritional supplements, cereal bars, cookies, bread, snacks etc. They can also be sprinkled on smoothies; salads, desserts, fruit juices etc (Ullah *et al.*, 2016).
- 6. Sesame seeds:** Sesame seeds are obtained from Sesame plant (*Sesamum indicum*) which belongs to Pedaliaceae family. It is a vital source of edible oil. On the basis of appearance sesame seeds are found in black, brown and white in nature. They are good source of various nutrients. According to Longvah *et al.* (2017) 100 g of white sesame seeds contain 21.70 g protein, 43.05 g total fat, 520 energy (kcal), 16.99 g fibre, 0.36 mg thiamine, 0.07 mg riboflavin, 3.94 mg niacin, 131 µg total folate, 62.74 µg vitamin D<sub>2</sub>, 1.24 mg α-tocopherol, 12.94 µg β carotene, 106 µg vitamin K, 1283 mg calcium, 15 mg iron, 372 mg magnesium, 754 mg phosphorus, 460 mg potassium, 27 mg selenium, 15 mg sodium, 7.77 mg zinc etc. Sesame seeds also contain good amount of monounsaturated, polyunsaturated fatty acids and lignans like sesamin, sesamol, sesaminol and sesamololol etc (Kim *et al.*, 2008). These seeds are used in roasted or in grind form for preparing various dishes like muffins, *ladoos*, desserts, pizza, burgers, toasts, sprinkled on salads or various other dishes etc and its oil is also used in cooking and for various medicinal purposes. They have nutritional and health benefits as they have ability to prevent cancer, anemia, osteoporosis, depression, high blood pressure etc and also improve heart health by maintaining normal plasma cholesterol, treat male infertility and prevent diabetes (Wu *et al.*, 2006).
- 7. Sunflower seeds:** The sunflower seeds are the fruits of the sunflower (*Helianthus annuus*). According to Longvah *et al.* (2017) 100 g sunflower seeds provide 586 energy (kcal), 6.85 g carbohydrates, 52 g total fat, 23.53 g protein, 10.80 g fiber, 0.59 mg thiamine, 0.13 mg riboflavin, 1.60 mg niacin, 81.79 µg total folate, 12.93 mg vitamin E, 8.15 µg β carotene,

176 mg calcium, 2.78 mg copper, 5.85 mg iron, 413 mg magnesium, 752 mg phosphorus, 559 mg potassium, 7.07 mg zinc, 17,803 mg monounsaturated and 25,580 mg polyunsaturated fatty acids. Due to the presence of various nutrients like vitamin E, magnesium, potassium, zinc, PUFA etc and non nutrients like phytosterols the regular consumption of sunflower seeds and its oil in diet helps in reducing the risk of various metabolic syndromes like heart disease, diabetes, cancer, osteoporosis, hypertension etc (Nandha *et al.*, 2014).

**8. Water melon seeds:** Watermelon seeds are obtained from watermelon (*Citrullus lanatus*) which belongs to Cucurbitaceae family and they are discarded by majority of the people while eating the fruit. According to USDA National Nutrient data base (2018) 100 gram water melon seeds contain 557 kilocalories, 28.33 g protein, 15.31 g carbohydrates, 47.37 g fat, 54 mg calcium, 755 mg phosphorus, 7.28 mg iron, 515 mg magnesium, 648 mg potassium, 10.24 mg zinc, 0.19 mg thiamine, 0.14 mg riboflavin, 3.55 mg niacin, 58 µg total folate, 28.09 g polyunsaturated fatty acids etc. They are helpful in reducing high blood pressure, osteoporosis, high blood glucose, memory loss, early ageing, cardiovascular diseases, obesity etc. Its dehulled seeds can be eaten as raw, roasted form or can be used in preparing various snacks, milled into flour and used for sauces, *laddoo*, *mathri*, biscuits, etc (Biswas *et al.*, 2016; Tabiri *et al.*, 2016).

#### **Conclusion:**

Seeds obtained from various fruits and vegetables have ample amount of various nutrients and some non nutritional factors such as phytoestrogens which are helpful in maintaining the nutritional status of all age groups especially postmenopausal women. According to various studies it has been observed that phytoestrogens obtained from various seeds and legumes have estrogenic effects which help in reducing the menopausal symptoms like hot flushes, night sweats low bone mineral density etc. In this way regular consumption of various edible seeds and legumes helps in maintaining the quality of life of post menopausal women.

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