



Garden Cress Seeds: Its Pros and Cons

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Garden cress (*Lepidium sativum* Linn.) plant belongs to family brassicaceae and botanically related to mustard. The plant seeds are well known for its nutritional and medicinal value. The seeds contain many phytochemical substances responsible for its medicinal properties. The seeds contain lepidine which acts as a diuretic. Imidazole compounds present in seeds are antihypertensive. Glucosinolates are found to be anticarcinogenic. Flavonoid compounds work as an antioxidants and semilepidinoside a and b are anti-asthmatic and anti-inflammatory [1,2]. Many studies have been conducted to prove its therapeutic effect. Mahassani and Al-Reemi [3] observed the potential of aqueous extract of garden cress seeds on the growth of cancer cells and found induced apoptosis. Aqueous extract was also found to be beneficial in hypertension [4]. Researchers also exhibited its laxative effect on body to cure [5] to cure gut disorders like constipation and indigestion. Eddouks [6] evaluated the hypoglycaemic effect of aqueous garden cress extract in rats. One of the studies showed that GCO containing ALA may play an important role in reduction of triglycerides, total cholesterol, VLDL and LDL and improve the lipid profile of rats [7]. *L. sativum* seeds contain semilepidinoside a and b compound which is responsible for its anti-asthmatic and anti-inflammatory activity [2]. Paranjape and Mehta [8] documented significant improvement in pulmonary functions of bronchial asthmatic patients with administration of garden cress seed powder. Bhasin., *et al.* [9] recorded the antioxidant activity of seeds in methanol extract.

The seeds comprise good amount of protein (23 - 25%) and almost equal amount of fat. The calcium content of seeds is 317 mg/100g. It also contains admirable amount of iron (17 - 33 mg/100g) and zinc (4 - 5 mg/100g) and other minerals and vitamins [10-12]. Since the seeds are rich in macro and micro nutrients, they have been supplemented in food products to combat malnutrition and anemia and other diseases. Many supplementation studies have been conducted on garden cress seeds and its products which really produced good results. For instance, laddu [10,11,13], chikki [10,11], cookies and muffins [14], dhokla mix [15], burfi [10,11], biscuits [10,11] and many more foods were prepared using different proportion of seeds. The products were analyzed for its nutritional value which was found to be improved with addition of seeds. But, the seeds also contain good amount of fibers (7 - 8 mg/100g) and anti-nutritional factors like oxalates (33 mg/100g) and phytates (1037 mg//100g) which may interfere in the absorption of macro and micro nutrients. Jain and Grover [16] showed decreased protein and starch digestibility of chikki supplemented with garden cress seeds. Iron availability was also found to

be decreased in foods products supplemented with garden cress seeds [17].

The seeds have good fatty acid profile. It has remarkable amount of linolenic acid (26 - 34%). Linoleic acid (7 - 11%), arachidic acid (2 - 3.5%) and oleic acid (26 - 30%) are also found in fair amount [10,11]. But, the seeds have erucic acid content (3 - 4%) also which is a matter of concern. The long term consumption of large doses of fatty acid may end up with cardiac problems as documented in animal studies [18]. The food products made up with seeds also have erucic acid which should not be ignored.

The seeds are rich in lysine (7 - 8 g/100g of protein) but have poor quantity of methionine (0.99 - 1.85 g/100g) and cystine (0.78 - 1.23 g/100g). A little amount of tryptophan (approx. 1.2 g/100g), phenylalanine (3.89 g/100g) and other amino acids are also found in seeds. Other oilseeds like peanuts, linseeds have better amino acid profile as compared to garden cress seeds.

Despite of being rich in nutrients, the seeds are not popular among population. Bitterness of the seeds is one of the factors which significantly decrease its acceptability. No doubt, the seeds have high nutritional value but due to some unwanted factors, it is not being harnessed to its fullest. Some techniques may be employed to increase the acceptability and consumption of seeds. As the seeds are cost effective, they may be used in ample amount to provide nutrition to poor population. Instead of using the seeds as a whole, the processed form of seeds may be used to increase its utilization. The erucic acid should be extracted before using the seed oil for consumption purpose. The fibre content should be decreased. The fibre free or less fibre containing seed powder may be used for supplementation purposes to increase nutrient availability of food products. The seeds are rich in proteins which may be used to manufacture protein isolates. The bitterness of seeds may be decreased by adding flavors during processing. By using processing methods and techniques, nutrients of garden cress seeds may be utilized and it may prove a boon to nutrient deficient population.

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