

## Linseed – A Nutritional Oilseed Crop

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### SUMMARY

Linseed belonging to family linaceae is an oilseed crop that has great nutritional potential of being a functional food crop. It is largely grown in diverse parts of the world as food and fiber crop. It is rich in fat, protein, fiber and Omega 3 fatty acids. The quality benefits when focused for human consumption including three major bioactive compounds: alpha-linolenic acid, lignans, and dietary fiber. It helps in lowering of total bad cholesterol along with low density lipoprotein. In addition to linseed being used for human consumption, it is used for manufacturing of different plant products as well. Few anti-nutritional compounds are also present in linseed, however in insignificant quantity. In this article, linseed nutritional qualities are highlighted.

### INTRODUCTION

Linseed or flax (*Linum Usitatissimum*) is a blue coloured flowering rabi crop that belongs to the Linaceae family. In native Indian languages, it is referred to as Alsii, Jawas, or Aksebija. Flax seed usage dates back to 5000 B.C. in various forms as a dietary element and for its therapeutic benefits (Oomah *et al*). The usage of flaxseed in dietary has expanded considerably during the last two decades all around the world. Flaxseed can be considered as potential functional food, by virtue of its nutritional elements i.e alpha linolenic acid (ALA), lignans and vitamin E. ALA is an excellent source of omega 3 fatty acids. Therefore, the flaxseed may be a substitute for giving this fatty acid to people concentrated in areas of the world where availability to marine foods, which are the richest suppliers of n-3 fatty acids is limited. 53 percent Alpha linolenic acids (ALAs), 17 percent linoleic acids (LAs), 19 percent oleic acids, 3 percent stearic acids, and 5 percent palmitic acids account for all lipids in flaxseed (about 30 percent), providing an outstanding n-6:n-3 fatty acid ratio of nearly 0.3:1. Apart from human consumption, linseed is also used to manufacture vast variety of products *i.e* paints, varnishes, cloth, printing ink etc. Almost all parts of linseed plant are employed for numerous applications. The oil contained in the seed is refined and utilised for culinary purposes. The stem produces high-quality fibre that is both strong and long-lasting.



**Nutritional Composition and Health Benefits:**

Flaxseed is classified as a functional food because it has three major bioactive constituents: alpha-linolenic acid, lignans, and dietary fibre. The major functional constituent of flaxseed is alpha-linolenic acid. In plant based diets, it is the only source of omega-3 fatty acid. Omega fats are classified into two types: omega-3 and omega-6 fatty acids. Linolenic acid, eicosapentaenoic acid (EPA), and docosahexanoic acid (DHA) are three nutritionally significant omega-3 fatty acids. These three fatty acids have been found to lower the risks of cardiac failure. (Hurteau, 2004). The omega-3 fatty acids have been reported to lower blood pressure, cholesterol, and triglyceride levels (Oomah and Maza, 1998). The presence of ALA in breast adipose tissue was shown to be inversely associated to the chance of developing breast cancer. (Maillard et al., 2002). Linseed is the greatest source of plant lignans. (Thompson et al., 1991). Flaxseed have anti cancer properties by virtue of antioxidant properties of lignans and its fibre aids in the reduction of blood glucose levels by slowing down the release of sugars into blood (Thakur et al., 2009). The protein composition of flaxseed has reported to vary between 10.5 and 31 percent, where primary proteins are albumin and globulin-like proteins.. (Oomah and Mazza, 1993). Arginine, aspartic acid, and glutamic acid are relatively abundant in flaxseed proteins, while lysine, methionine, and cystine are the limiting amino acids. Flaxseed protein was efficient in decreasing plasma cholesterol and triglyceride levels (TAG) compared to soy protein and casein protein (Bhathena et al., 2002). Since flax is gluten-free, individuals who are gluten-sensitive can include it in their diets (Morris, 2003).

**Antinutrients in flaxseed:** Antinutritional components like cyanogenic glycosides, linatine (an antipyridoxine factor), trypsin inhibitors and phytic acid are found in insignificant amounts in flaxseed. It is generally preferred to roast the flaxseeds before consuming in order to eliminate cyanogenic glycosides.

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