

Flaxseed: an emerging functional food ingredient

Dr. Manmath D. Sontakke and Mr. Vitthal R. Chavan

Assistant Professor,

MGM College of Food Technology, Gandheli, Aurangabad, Maharashtra

Corresponding Email: ms.mgmcft@gmail.com

ARTICLE ID: 004

Introduction

Flaxseed (*Linum usitatissimum*) belonging to family Lineaceae, popularly known as Alsi, Jawas, Aksebija in Indian languages, Flax seed is a blue flowering crop that produces small, flat seeds ranging in colour from golden yellow to reddish brown. The texture of flaxseed is crisp and chewy possessing a pleasant nutty taste. In India flaxseed is mainly cultivated in Madhya Pradesh, Maharashtra, Chhattisgarh and Bihar. It is interesting to know that flaxseed was native of India and was a staple food crop. In India, flaxseed is still being consumed as food and as well as for medicinal purposes.



It has emerged as an attractive nutritional food because of its exceptionally high content of alpha-linolenic acid (ALA), dietary fiber, high quality protein and phytoestrogens. Flaxseeds contain about 55% ALA, 28–30% protein and 35% fiber. Flaxseed is a rich source of different types of phenolics such as lignans, phenolic acids, flavonoids, phenylpropanoids and tannins demonstrate antioxidant its potential. Flaxseed is emerging as an important functional food ingredient because of its rich contents of α -linolenic acid (ALA), lignans, and fiber.

Nutritional profile of flaxseed:

The average chemical composition of flaxseed contains 41% fat, 28% total dietary fiber, 20% protein, 7.7% moisture, 3.5% ash, and 1% simple sugars. Flaxseed has a unique

fatty acid profile, being fairly low in saturated fatty acids and rich in a-linolenic acid (ALA), the essential ω -3 fatty acid. Fatty acids contained in flaxseed are saturated fatty acids constitute 9%; monounsaturated fatty acids (MUFAs), 18%; and polyunsaturated fatty acids (PUFAs), 73% and polyunsaturated fatty acids, ALA constitutes the majority at 57% of total fatty acids, making flaxseed one of the richest sources of these fatty acid. Linoleic acid, the essential ω -6 fatty acid, is present in a smaller amount (16%). Because of its high ALA content, flaxseed has an ω -6/ ω -3 fatty acid ratio of 0.3:1.

Fish oil is the traditional source of dietary omega-3 fatty acids while flaxseed oil can be used as a vegetarian source of dietary omega-3 fatty acids. The flaxseed hull is a concentrated source of lignan, i.e., 30.9 mg/g hull vs. 12.9 mg/g whole seed. Flaxseed oil is low in saturated fat (9% of total fatty acids), moderate in monosaturated fat (18%), and rich in polyunsaturated fat (73%). Flaxseed proteins possess high digestibility coefficients (89.6%) at 8% level of protein intake and biological value (77.4%).

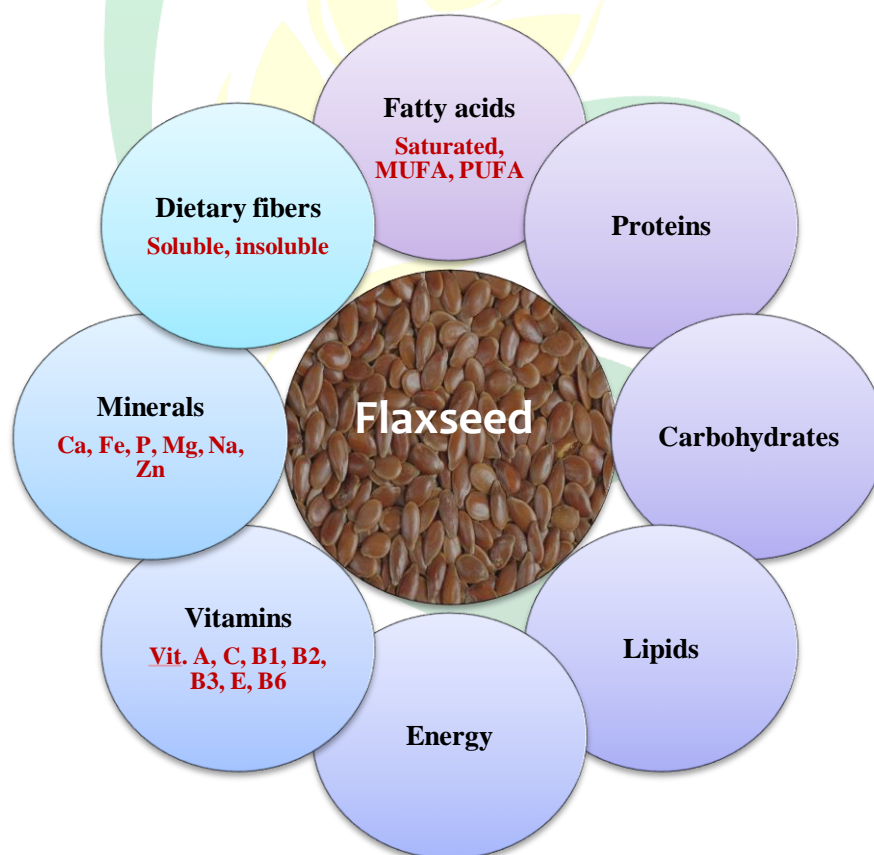


Fig. 1: Nutritional profile of flaxseed

Health benefits

- Flaxseed has potential health benefits besides the nutrition, due to: High content of ω -3 α -linolenic acid; Rich in dietary soluble and insoluble fibers; and High content of lignans, acting as anti-oxidants and phytoestrogens.
- Flaxseed oil, fibers and flax lignans have potential health benefits such as in reduction of cardiovascular disease, atherosclerosis, diabetes, cancer, arthritis, osteoporosis, autoimmune and neurological disorders. Flax protein helps in the prevention and treatment of heart disease and in supporting the immune system

Conclusion

Flaxseed is emerging as an important functional food ingredient because of its rich contents of α -linolenic acid (ALA), lignan, and fiber. It is primarily used for value addition and decoration of texture of baked products. As a functional food ingredient, flax or flaxseed oil has been incorporated into baked foods, juices, milk and dairy products, muffins, dry pasta products, macaroni and meat products.