

Flaxseeds: A Nutritional Powerhouse for Health and Wellness.

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ABSTRACT: Flaxseed (*Linum usitatissimum*) is cultivated in many parts of the world for oil, fiber, and medicinal purposes. Flaxseeds have many health benefits, such as treatment for diabetes, heart diseases, cancer, etc. It contains protein, fiber, phytoestrogens, alpha-linoleic acid, lipids, palmitic acid, and other micronutrients in a weighty amount. This review focuses on the various aspects related to the composition of flaxseed and its functional and potential health benefits.

INTRODUCTION: Flaxseed (*Linum usitatissimum*), also known as alsin, is a plant belonging to the linaceae family. Its seeds are known for health benefits that reduce the risk associated with heart disease, diabetes, and cancer (colon cancer, breast cancer, prostate cancer). Flaxseed is cultivated in many parts of the world for oil, fiber, medicinal purposes, and as a nutritional product. The top producer of flaxseed in the world is Canada, with 40% of the world population in 2023–2024. The demand for flaxseed has increased due to public awareness about the relationship between health and diet. Flaxseed has a nutty flavour and crunchy texture and is generally utilized for industrial purposes. Flaxseed contains 35%–45% oil, 20%–30% protein, and 28% dietary fiber. Flaxseed has a high concentration of polyunsaturated fatty acids (55%). On a dry basis, flaxseed contains 45% lipid, cotyledons contain 75% lipid, and the remaining 3% and 22% are dispersed to the seed coat and embryo. The lipids of flaxseed contain a minor quantity of saturated fatty acids, stearic acid (about 3%), and palmitic acid (about 5%). Flaxseeds are a spectacular source of omega-3 fatty acids for those who don't consume seafood. The consumption of flaxseed may improve health by controlling hyperglycaemia and preventing obesity. Flaxseeds can also be used to improve the quality of traditional foods such as beef patties, etc. The goal of this study is to provide a general overview of the health benefits, value-added products, nutritional profile, and toxicity of flaxseeds.

METHODOLOGY: The research was conducted based on a pot experiment and was grown in three pots, each comprised of twenty seeds. The variety was sown in October 2023. The

material was checked at the green house at Aj College, Mirpurkhas, Sindh. Seeds of *Linum usitatissimum* were obtained from a British company, ICI Pakistan; the earliest yield is possible to obtain after 92 days.

ANALYTICAL METHODOLOGY:

Flaxseeds were immaculated and dried following harvesting. To get ready for examination , the seed were ground into fine power in laboratory mill

NUTRITIONAL ANALYSIS:

Nutritional information per 100g	
Energy	541 Kcal.
Fat	34 g.
Protein	15 g.
Carbohydrate	47 g.
Sugar	0 g.
Cholesterol	0 mg.
Sat. Fat	5 g.
Sodium	17 mg.
Dietary Fiber	2 g.

CONCLUSION: The body gains numerous health advantages when milled flaxseed is added to the diet. Other areas, such as diabetes and gastrointestinal health, have also responded favourably to the therapeutic benefits of dietary flaxseed, while cardiovascular disease and cancer are among the best studied areas that have provided compelling evidence of a beneficial activity. Although more research is needed in several areas of human health before firm conclusions can be drawn, the initial findings are encouraging. There doesn't seem to be much evidence against including flaxseed in a daily diet, and there isn't much evidence that it is harmful when taken as a supplement.

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