
A Therapeutic Role of Flaxseed

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Abstract:

*Flaxseed, a small brown seed produced from the blue flowers of the flax crop (*Linum usitatissimum*) grown in the Canadian prairies, is the richest plant source of the u-3 PUFA α -Linolenic acid (ALA; C18:3n-3) Flaxseed exists in 4 main forms: whole seed, ground, partially defatted flaxseed meal, or flaxseed oil. Flaxseed accumulates many biologically active compound including Linolenic acid, Linoleic acid, Lignans, cyclic peptides, polysaccharides, alkaloids, cyanogenic glycosides, and cadmium, where it helps to prevent many chronic disease.*

Key words: Flax Seed, Dietary Fibres, Lignans, Linolenic Acid.

INTRODUCTION

Flaxseed is a small brown seed produced from the blue flowers of the flax crop (*Linum usitatissimum*) grown in the Canadian prairies, one of the oldest cultivated crops, which is commercially grown for oil, fibre, and food [1]. Worldwide Flaxseed is widely used for its edible oil, it may be consumed directly as milled seed or crushed. Edible flaxseeds are made with yellow and brown seeds. The seed colour has been correlated with differences in mucilage viscosity and other processing characteristics [2]. It has been consumed for years as a functional food this increases the demand for flaxseed and its products worldwide [3]. Flaxseed is a commercial oilseed which produces triglyceride oil that is a rich source of linolenic acid.

There are many flaxseed products are commercially used for consumption. A number of investigations have demonstrated that diet supplemented with flaxseed oil has profound beneficial health effects in various pathologies [4].

HEALTH BENEFITS OF FLAX SEED AND ITS OIL

Numerous health benefits of flaxseed products has been discussed and proved in many researches, which is summarized as follows. The antiplatelet effect in flaxseed promote the platelet aggregation in patients with Lupus Nephritis [30] The Hypotensive effects in flaxseed report that it reduces systolic and diastolic blood pressure after consuming 40 g of ground flaxseed per day Consumption of flaxseed will also reduces the inflammatory

marker, anti-inflammatory and anti atherogenic activities could be attributed to components of flaxseed, such as lignans and its derivatives.

BENEFICIAL BIOACTIVE COMPOUND IN FLAXSEED

Flax seed is rich in many bioactive compound this makes to be used as a functional food worldwide, it's rich in vitamins (B3 and E) and minerals (calcium, magnesium and phosphorus). In addition phenolics, lignans, flavonoids, phenylpropanoids and tannins are also seen. Flaxseed has phenolic content (TPC) ranged from 4.6 to 9.4 mg [5]. Even more it has dietary sources of lignin precursor, secoisolariciresinol diglucoside [6].

Flaxseed oil is an excellent source of the omega-3 fatty acid shows beneficial effect against hypertension, platelet aggregation, dyslipidemia, atherosclerosis, and arrhythmias [7]. linolenic acid with typical levels of 55% in the oil [1]. It is also well known for its antioxidant and hypolipidemic effects [4]. In recent study it is also reported that Dietary lignans are broadly available in many plant source, particularly concentrated in flaxseed [8].

Recently, phytoestrogens have gained more attention towards research because of evidence suggesting their protective roles against numerous chronic diseases, including cancers, CVD, dyslipidemia and diabetes⁸⁻⁹

FLAX SEED AGAINST CANCER

The Whole flaxseed is widely accepted for it's anticancer activity [10].

Lignan complex isolated from flaxseed contains secoisolariciresinol diglucoside (SDG), 3-hydroxy-3methylglutaric acid (HMGA) and cinnamic acids which act as a good antioxidants that play a vital role with many types of cancer. Dietary flaxseed flour reduces epithelial cell proliferation and nuclear aberrations in female rat mammary glands. This finding indicates that flaxseed may reduced the risk and chances of mammary cancer [11]. Additionally, it has been found that flaxseed lignan reduces mammary tumor growth in the later stages of carcinogenesis [12].

FLAX SEED AGAINST DIABETES MELLITUS

The supplementation of lignans in the diabetic diet will improve the glycemic control, without disturbing the fasting glucose and insulin concentrations, insulin resistance and blood lipid profiles. Urinary excretion of lignan metabolites (enterodiol and enterolactone) was significantly higher after the lignan supplementation; this proves that Daily lignan supplementation improves the glycemic control in type 2 diabetic patients [13]. In recent study the flaxseed consumption has also shown a decrease in postprandial glucose absorption and improves the glucose tolerance [14].

FLAX SEED AGAINST HEART DISEASE

Atherosclerotic Coronary Heart Disease (CHD) is estimated to be the leading cause of cardiovascular morbidity and mortality worldwide [15]. The u-3 in flaxseed reduces the incidence of myocardial infarcts and stroke [16]

Administration of flaxseed oil on rats significantly reduced the lipid peroxidation and have a modulating role in hypercholesterolemia induced oxidative stress as well as it improves the antioxidant defence system in hepatic tissues. Hence, dietary consumption of flaxseed oil may provide benefits for patients with hypercholesterolemia-induced oxidative stress.^[17]

The glycosides of lignans found in flaxseed are hydrolyzed by colon bacteria producing bioactive lignans such as enterolactone (ENL) and enterodiol (END) [18]. These substances were found to protect against cardiovascular disease by decreasing inflammatory response^[19-20]

FLAX SEED IN REDUCING SERUM LIPIDS

Flaxseed-supplemented diet with 30–50 g/day showed a beneficial effect on lipid profiles in both normal- and hypercholesterolemic subjects ^[21]. Recent, study reported that secoisolariciresinol diglucoside (SDG), the major plant lignan in flaxseed [22], reduced the total cholesterol and LDL cholesterol concentrations in rabbits ^[23-24].

Consumption of flaxseed oil 6gms/day will reduce the serum triglyceride concentration ^[25]. The soluble and insoluble fiber content of flaxseed forms a typical viscous gum that once digested, may lower the circulating total cholesterol (TC) and low-density lipoprotein (LDL) cholesterol levels by enhancing transit time and increasing bile acid excretion ^[26].

FLAX SEED AGAINST RENAL DISORDER

Renal Ischemia reperfusion (RIR) injury is a common complication during a number of clinically important conditions ^[27-28]. Supplementation with aqueous flaxseed oil may be useful agents for the prevention of renal ischemia-reperfusion (RIR)-induced oxidative injury in rats by lowering the Malondialdehyde (MDA) and enhanced superoxide dismutase (SOD) levels after RIR injury.^[29]

CONCLUSION

Flaxseed contains many bioactive components which provide a numerous health benefits such as reduction in the risk and occurrence of cardio vascular disease, breast cancer, osteoporosis, diabetes, kidney disease, menopausal symptoms and other health benefits. Hence, this review concludes that flax seed products are a good therapeutic supplement to prevent and treat many chronic diseases.

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BOWEL OBSTRUCTION

