



THE FLAX SEED- A PROMISING TRADITIONAL HERBAL MEDICINE WITH MUTI DIMENSIONAL PHARMACOLOGICAL ACTIVITIES

Shagufta Nesar¹ & Kiran Rafiq^{2*}

¹Jinnah College of Pharmacy, Sohail University, Karachi.

²Institute of Pharmaceutical Sciences, Jinnah Sindh Medical University, Karachi.

*Corresponding author: kiran.rafiq@jsmu.edu.pk

ABSTRACT

Flaxseed commonly known as flax or linseeds. It is a member of genus *Linum* and belong to family *Linaceae*. Flax seed is annual, non woody herbaceous plant. *Linum usitatissimum* is the botanical name of flax seed. The vast and significant medicinal uses of Flaxseed has proved its importance and versatility in socioeconomic development of humans. In Pakistan it is cultivated in different cities of Sindh and Punjab. Usually, it has been used to ameliorate the digestive system, maintain blood pressure towards normal and decrease bad cholesterol, many benefits in type 2 diabetes and reduce the risk of cancer. Flax seeds or flaxseed oil are also utilized in inflammatory bowel disease. Due to high content of omega-3, fiber, and other distinct constituents, it is famous for its effectiveness.

Key Words: Flax seed, multiple uses, digestive health, hypertension, diabetes.

INTRODUCTION

Flaxseed or Linseeds are brown or yellow in color. They are utilized as whole, milled, or roasted and are generally refined into flaxseed oil. It is cultured in Asia, Europe and South America. Plenary seeds have 534 calories per 100 grams. It comprises of water (7%), fat (42%), polyunsaturated fatty acids (73%), such as omega-6 fatty acids and the omega-3 fatty acid, monounsaturated and saturated fatty acids

(27%). It also contains 29% carbohydrate that consist of 95% fiber, and 18% protein [1]. Flax seeds are a good source of several vitamins such as B1, B2, B3, B6, C and minerals (Calcium, Iron, Copper, Molybdenum, Magnesium and phosphorus) [2-5].

Flaxseeds also comprises of many other useful constituents:

- **P-Coumaric acid:** It is polyphenol and act as main antioxidants in flaxseeds.



Figure-1: Flaxseeds



Figure-2: Grounded Flaxseeds

- **Ferulic acid:** It is also an antioxidant and prevent from many chronic illnesses [6].
- **Phytosterols:** They have cholesterol-lowering effects [7].
- **Lignans:** Flax seeds are exceptionally rich in Lignans, its quantity is 800 times more than in other nutriment [8].

MATERIAL AND METHODS

All information associated with the use of Flaxseed/Linseeds were searched from Google scholar, PubMed, Science direct and local data bases and news agencies. The present research was conducted using the different key words like Flaxseed/Linseed, Flaxseed oil, Nutraceuticals and super food

and pharmacological use. In present meta-analysis current data regarding the constituents, nutrimental value and therapeutic use of *Carica papaya* plant is covered.

Pharmacological actions of flaxseeds: Flax seed having many pharmacological actions and considered to be a confident drug for the treatment of many diseases like cancer, atherosclerosis, fever, pain and ulcers. It has cardio-protective, anti-inflammatory, antidiarrheal and analgesic activity and effective against diabetes [9]. It is emerging as a super food.

Dual effectiveness of Flaxseed in Constipation and in diarrhea: Flaxseed oil acts as laxative but fried flax seeds are acts as an absorbent and used in irritable bowel syndrome (IBS) associated with diarrhea [10]. Another study reported that Flaxseeds Oil and mucilage were effective as laxative and as antidiarrheal [11].

Flaxseed oil is effective in constipation and in other diseases where constipation is seen. Therefore, patient is advised to take flaxseed oil 3-5ml at night as part of the diet [12].

Anti-inflammatory: Dietary consumption of flaxseed reduce the inflammation. The effect of *L. usitatissimum* fixed oil on distinct phases of the inflammatory process. In initial phase due to local vasodilatation, increased the capillary permeability leading to ejaculation, followed by leucocytes migration [13]. The fixed oil of flaxseed/linseed inhibited inflammatory



markers like Prostaglandin E₂, leukotriene, histamine, bradykinin and arachidonic acid [14].

Hepato-protective properties: Use of Omega-3 fatty acid decreases the burden of many diseases and have beneficial effects. High content of Omega 3 present in linseed/flaxseed. Therefore, flaxseed chutney possesses antioxidant and significant hepato-protective properties. It decreases the serum marker enzymes, glutamate oxaloacetate transaminase (GOT), glutamate pyruvate transaminase (GPT) and alkaline phosphatase (ALP) and thus manifest remarkable hepato-protective effect [15].

Topical Use: Flaxseed/Linseed pastes is very effective in wound healing and carbuncle. Flaxseed oil is used topically to cure joint pain, trauma and myalgia. The oil is also useful for different types of skin infection like acne, psoriasis, eczema, and sunburn [16]. It stimulates the growth of hair and nails. The oil is hugely efficacious to maintain the hormonal balance due to the presence of lignans.

Strengthen the CNS, Reduce Anxiety Level: Due to the presence of omega 3 fatty acids flaxseed helps in the transmission of nervous impulses and its oil is useful for numbness and tingling as well as for preventing serious nerve diseases like Parkinson's and Alzheimer's. Addition of flaxseed with diet have anti-depressant effects in mice subjected to chronic stress. It is effective for the treatment of ADHD

(attention deficit hyperactivity disorder) and stress [17].

Flaxseed as Hormone supplement: Flaxseed is effective against menopausal symptoms because it contains phytoestrogens that can stimulate the human sex hormone estrogen. This hormone is responsible for development and regulation of the female reproductive system and secondary sex characteristics. Flaxseed is used against infertility, impotence, menstrual cramps and menopausal problems [18, 19].

Flaxseed as Cardio-protective: It is effective for the cure of cardiac disorders. It acts as a bloodthinning agent and useful in preventing and treating atherosclerosis [20]. Omega-3 fatty acids offer protection against heart diseases by getting to the membrane of body cells and acting as guards that admit only healthy substances and preclude damaging ones [21]. A study on ALA (alpha linolenic acid) and other omega-3 fatty acids propose that Flaxseed possibly protect from cardiovascular diseases. It is suggested as significant cardio-tonic and beneficial for the cure of different heart diseases and control blood pressure [22].

Flaxseed as Anticarcinogenic: It is investigated that flaxseeds effective against breast cancer cell. The result of previous study indicated that flaxseed oil can specifically inhibit cancer cell growth [23]. Another in-vitro study determined the selective anti-cancerous effect exhibited by the flaxseed lignan, ENL (Enterolactone), on



AML (acute myeloid leukemia) cells [24].

Anti-bacterial activity: Tehrani and his co-workers investigated the effect of flaxseed proteins on many species of Gram positive and Gram-negative bacteria. The effect is distinguishable on *S. typhimurium*, *E. faecalis*, *E. coli* and *K. pneumonia* [25].

Effectiveness of Flaxseed in Type 2

Diabetes: The effects of flaxseed by double-blind, randomized, crossover trial study on Type 2 diabetic patients has established the seed excellent antidiabetic as well. Flaxseed supplementation act to increase the blood lipid level and phytoestrogen present in seeds improve the glycemic control in people [26]. It is explored as one of the “Nutraceuticals” because it is taken as food. Secondary to that, it has health benefits and therapeutic effects. For these reasons it is added to diabetic patient food regimen for controlling and regulating blood sugar and serum lipid [27]. Another study analyzed the effect of flaxseed addition on obese glucose intolerant patients and actualized that the flaxseed active ingredient has momentous antioxidant effects [28].

Effective for Renal function:

Phytoestrogens is a plant compound present in Flaxseed as lignan have a beneficial role in chronic kidney disease. Flaxseed has been shown to attenuate proteinuria and renal pathological condition related with growing kidney damage. Flaxseed have omega-3 polyunsaturated fatty acids that decrease cyclosporine (cyclosporine induced kidney

toxicity) and to protect renal function and decrease protein level in urine (Proteinuria) [29].

Natural Moisturizer: Flax seeds makes skin, nails and hair healthier. It can be used as a natural skin moisturizer. It can also improve symptoms of acne, rosacea, and eczema.

Side effects of Flaxseed: Excessive quantity of Flaxseed cause few side effects such as gastritis, bloating, intestinal obstruction, dyspepsia, nausea, diarrhea, flatulence, prostate cancer risk [30]. The use of flaxseed should be avoided in pregnancy, lactation, bleeding disorder, hypotension, food allergy and gastritis.

CONCLUSION

To treat and manage different diseases herbal remedies have been utilized in traditional medicines. Flaxseed contains alpha-linoleic acid, lignans, flavonoids, minerals, sodium, Vitamins etc. Research reveals that it is used as cardio-protective, hepato-protective, antidiabetic, anti-inflammatory, anti-cancerous and antioxidant. Flaxseed can be a good source of many constituents like fatty acids, vitamins, phytoestrogens, proteins and flavonoids. Thus, the Flaxseed is a choice of remedy for many ailments. It is use as antioxidant, antidiabetic, antihypertensive, anticancer and laxative. Flax provides a healthy food profile and improves the nutrition of people.

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