



A Review Paper on Enrichment of Bread with Different Types of Multiseeds.

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Abstract: Bread was known to be a staple food right from the dawn of agriculture, It is one of the oldest consumed food - stuff across the globe by all age groups. However, it was made from soybean flour (Defatted flour), Pumpkin seed, Watermelon seed, Sunflower seed, Flax seed and leavened by the yeast - *Saccharomyces cerevisiae* and baked suitably. there was a requirement for various sorts of breads needing the utilization of composite flours of other grains which might provide the consumers the grain nutrients to bridge the gap of malnutrition, especially the protein energy gap and yet is mild to the gastrointestinal system, This review paper highlights the effect of multi seeds on the mechanical and physical properties of bread consistent with the enrichment level, origin and way of addition, In general, the incorporation of multi seeds improves the nutritional profile of bakery products with and without gluten, and provides several health benefits. Adhesive of multi seeds can also act as a fat replacer to their properties. The incorporation of multi seeds modifies the rheology of the doughs, the volume of the products and their texture, affecting their organoleptic characteristics and their acceptability. Nevertheless, these changes will depend on the type of seed used, as well as on the method of addition.

Key Words: Soybean Flour, Pumpkin seed, Watermelon Seed, Sunflower seed, Flax seed, effect .

Bread may be described as a fermented product which is produced mainly from wheat flour, yeast, water, sugar, salt and other ingredients needed according, by a series of process involving mixing, kneading, proofing, shaping, baking (De wettick 2008). We all eat vegetable and fruit but waste through its seed then I mix them all and made a bread. I think that some vegetable's and fruit's Seeds are very beneficial and high Nutrients present. I use also Defatted Flour in this product and it has 0.9 % fat and high protein present. Defatted Flour is obtained from soybean seeds. This product is benefits for fat replace because Flax seed and Pumpkin seed are present in fat replacer agent. This product is also called as Nutraceutical Product. Traditionally only wheat has been used as an entire wheat meal (atta) in production of chapattis, paratha and poori whereas refined flour (maida) finds great application in manufacture of bakery foods like bread and cookies. 75 per cent wheat is produced as whole flour and only 25 per cent is employed in preparation of bakery goods. It has been proved that

directly e.g. regular consumption of wheat causes lysine deficiency while gluten protein may cause allergies in some people.

Diet should be balanced besides being it should be wholesome, appetizing, palatable and satisfying. It has been proved that right food can cure several diet related disorders. With increasing consumer awareness, improved educational status and standard of living, knowledge about natural foods, change in food habits and increased cost of medicines, there is an increased trend in consumption of healthy foods and hence alternate flour and meal is excellent source to supply functional ingredients from other natural sources in our diet.

The multi seed products feature a combination of seeds such as Defatted flour, Pumpkin seed, Watermelon seed, sunflower seed, flax seed etc. and provide opportunity for snack manufacturers to develop products within an ingenious appearance, featuring new texture and colour with a beneficial nutritional profile. Multigrain products must be in fact whole grain to



supply maximum nutritional benefits. The use of multigrain is well established in other food sectors, particularly bakery and breakfast cereals. They make a positive contribution to the taste and texture of products and consumers readily accept the health benefits.

Super nutrition can come in small packages. Just look at seed, the latest dietary darling. "Seeds offer a ton of nutritional benefits, from helping with cholesterol levels to fighting off inflammation and infections to contributing to steady blood sugar." And this tasty treat is appearing everywhere, including in breads and puddings.

Soy flour (defatted flour) is known for its great nutritional values. It contains high protein and is usually mixed with whole grain flours in many recipes. It is also used in home cooking for a delicious soy-based diet.

Soy flour is extremely rich in top quality protein and is a superb source of fatty acids, magnesium, fiber, vitamin B₆, iron, calcium, lecithin, thiamin, riboflavin & protein. Inclusion of isoflavones reduces the risk of certain cancers, improves bone health, and also helps in lowering cholesterol levels and heart diseases.

Flax seeds are believed to be due to the presence of alpha linolenic acids (ALA), lignans and fiber. Flax seeds are reported to possess a lot of health benefits. e.g. flax seeds are most commonly used as a laxative, flax seed oil is used for various conditions like arthritis, both flax seed and flax oil have been used to prevent high cholesterol levels and reduce the risk of cancer.

Pumpkin seeds are nutrition-wise, it's hard to beat pumpkin seeds. You get 9 grams of protein & 45 to 60 percent of the daily need for muscle in 1/4 cup.

Sunflower seeds are an excellent source of vitamin E, a fat-soluble vitamin that provides antioxidants and immune-boosting effects. A quarter cup of sunflower seeds also has 7 grams of protein.

Watermelon is an incredibly hydrating

fruit because it contains around 92 percent of water, and is enriched with tons of essential minerals and vitamins. This succulent melon also contains tons of seeds, which we generally throw away after consumption. But did you know that these little black seeds are really rich in nutrition? The tiny seeds inside the large watermelon fruit have some magical properties, scroll right down to find out! They are low in calories and offer an array of micronutrients like copper, zinc, potassium, magnesium, iron, folate etc, which have various health benefits. Some of them are listed below:

Watermelon seeds are also linked with stronger immunity and better health. Due to the presence of magnesium these seeds can also cure hypertension, which is directly related to heart health. Consumption of watermelon seeds daily in moderate quantity helps in boosting your heart health and maintaining your blood pressure. The seeds are filled with proteins and iron that are known to improve the texture and quality of hair.

Multi-seed breads also provide the required quantity of thiamine, regular consumption of single items affects health. Phosphorus, potassium, riboflavin, pantothenic acid, calcium, iron, zinc and copper. The vitamin B in multi-seed breads helps to convert in energy.

Therefore this investigation was planned to optimize the various levels of varied grains for development of nutritionally enriched multigrain bread.

Material and Methods- The following flours of different grains were procured from the local market, Soybean flour, Wheat flour, Maida etc. And different types of seeds like Pumpkin seeds, watermelon seeds, flax seeds, sunflower seeds etc. Compressed yeast was used for all the studies which was obtained from suppliers to bakeries. Other materials needed for making the breads were salt, shortening etc., were all procured from the local market in Varanasi.

Preparation of Composite flours for bread preparation- The flours from different grains



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Preparation of Composite flours for bread preparation- The flours from different grains and different seeds were blended in various proportions as shown in Table 1. These were then kneaded in dough after adding 2g of compressed yeast suspended in 1% salt solution. The dough was then put in appropriate bread mould and allowed to stand for 60 to 90 min. at 30°C till its size was twice the one before. This is Bread preparation by straight-dough method.

Sample no.	Wheat flour (g)	Defatted Soybean flour (g)	Pumpkin seeds (g)	Watermelon seeds (g)	Flax seeds (g)	Sunflower seeds (g)
1	200	50	30	20	30	30
2	200	50	20	20	30	20
3	200	50	30	20	30	30
4	200	50	30	20	30	30

Table 1: Combinations of flours from different seeds.

Nutritional Profile- In their research, pumpkin seeds were 30% lipids, while in the study by Seymen et al. the oil contents of pumpkin seeds were between 33% and 47% counting on the variability. Linoleic acid (76) in sunflower, watermelon seeds; and linolenic acid (73) in flax. In the case of pumpkin seeds, aside from their high linoleic acid level, their monounsaturated fatty acid content is additionally highlighted. These seeds also have significant protein content (between 15 and 20%) and a fiber percentage higher than that of cereal grains, with fiber content of flax seeds over 25%. Flax seeds have shown a positive effect on cardiovascular diseases and hypercholesterolemic atherosclerosis. Watermelon seeds have beneficial in combating protein deficiencies seed oil removes sebum, dirt and grease incredible source of magnesium helps in improving male fertility can

be used for treating diabetes keep your hair healthy and shiny fatty acids in seeds keep the skin moisturized contain antioxidants and prevent signs of ageing.

The interesting composition of those grains has attracted interest for his or her possible health benefits. Fiber consumption has been shown to be effective against CVD (Cardiovascular diseases), CVD mortality, coronary artery disease and several kinds of cancer, as well as against various gastrointestinal disorders, including: gastroesophageal reflux disease, duodenal ulcer, diverticulitis, constipation, and haemorrhoids. The consumption of omega-3 fatty acids has also been associated with a reduction of cardiovascular morbidity and mortality, and dietary supplementation may also benefit patients with dyslipidaemia, atherosclerosis, hypertension, diabetes mellitus, metabolic syndrome, obesity, inflammatory diseases, neurological/neuropsychiatric disorders and eye diseases. Lignans, a phytoestrogen that stands out among antioxidant substances, are found in important quantities in flax, and pumpkin seeds and have shown promise in reducing growth of cancerous tumours, especially hormone-sensitive ones such as those of the breast, endometrium, and prostate. Moreover, a synergistic effect between sesame lignans and the vitamin E activity of tocopherols has been proved. Vitamin E activity increases in the presence of these lignans, while the cholesterol-lowering effect of lignans is enhanced. The stability of flax lignans to the conditions of baking processes and storage has also been demonstrated and thus no loss of functionality when incorporated into bakery products has been observed. Flax seeds have shown a positive effect on cardiovascular diseases and hypercholesterolemic atherosclerosis and the sesame consumption has been linked to positive effects against some illnesses such as cancer, oxidative stress, cardiovascular disease, osteoporosis and other degenerative diseases.

In the case of flaxseed, it has been

demonstrated that the incorporation of the flour of this seed in a wide number of products does not affect the consumption preferences of the same by the population, so its use can be a good strategy to provide significant health-related benefits to patients with cardiovascular disease.

Nutritional value of Multi seeds

Calories	575
Fat	30
Sodium (g)	75
Carbohydrate (g)	29
Protein (g)	108
Sugar (g)	0
Fiber (g)	15
Iron (mg)	16
Calcium (mg)	43
Cholesterol (g)	0

Bread Quality- The effect of oilseed flours on breads is determined by their components. It is known that the incorporation of fibers, such as celluloses, or vegetable proteins usually reduces the specific volume of the bread's original firmer textures. The effect of the incorporation of oils on breads depends on their added quantity. In small amounts and depending on the type of oil added the incorporation of oils can be beneficial, while in larger quantities they weaken the dough and have negative effects on the volume of the breads. Therefore, depending on the added product (whole meal, protein concentrate, defatted flour), its composition and the amount added, the effects on the quality of bread may vary. Generally, a negative effect on the volume of the breads is expected after incorporation. When non-ground whole seeds are used, a minor effect is predicted since not all of their components interact with the flour .

Other research, focused on other different seeds such as watermelon seed, flax seed, sunflower seed and pumpkin at levels above 14%, showed a decrease in the volume of the breads when they were enriched with flours of these seeds or protein concentrates made from them.

Sensory Properties- Although it has been proved that oilseeds can provide important health benefits, breads enriched with these seeds can only become commercially viable if consumers value their organoleptic properties. On this matter, multiple studies have evaluated the buyer acceptance

of oilseed-enriched breads. In general, the oilseed enrichment of breads with and without gluten does not reduce the quality and acceptability to customers. Despite the addition of some seeds resulting in changes in the texture, colour and odour of the bread, there were no significant differences for crumb colour, crumb texture, quality and overall acceptability between the control and breads prepared with watermelon, sunflower, pumpkin and flax seeds. In general, it can be affirmed that although the organoleptic characteristics of the breads change with the inclusion of multi seeds or flours, there is no difference in the acceptability to consumers of these breads up to levels of 10-15%



Scores given by the members of jury on samples (1 to 4)

Parameters	1	2	3	4
Outside appearance	8	7	8	8
Color of Slices	9	9	8	7
Odor	8	9	7	8
Flavor	9	8	9	9
Consistency	8	9	6	6
Mouth fullness	7	9	7	7

It can be noted that sample 2, was fairly accepted by the panel of jury to be suitable for consumers not only on the nutritional values but also on the basis of sensory analysis.

Conclusion- The incorporation of oilseeds improves the nutritional profile of bread, increasing its protein, fiber, vitamins, minerals, essential fatty acids and bioactive compounds. The use of oilseed mucilages has also been used successfully to replace the fat to produce healthier good quality bread. Finally, it must be stressed that the consumer must get the required nutrition from a good balanced diet prepared at home. The seeds nutrition received from such processed food will not provide the entire required daily intake. The multi seeds bread is only a stop gap arrangement to avoid nutritional deficiencies through malnutrition.



REFERENCES

1. Muñoz L.A., Cobos A., Diaz O., Aguilera J.M. Chia seeds: Microstructure, mucilage extraction and hydration. *J. Food Eng.* 2012;108:216-224. doi: 10.1016/j.jfoodeng.2011.06.037. [CrossRef] [Google Scholar]
2. Kajla P., Sharma A, Sood D.R. Flaxseed- A potential functional food source. *J. Food Sci. Technol.* 2015;52:1857-1871. doi: 10.1007/s13197-014-1293-y. [PMC free article] [PubMed] [CrossRef] [Google Scholar]
3. USDA . National Nutrient Database for Standard Reference. USDA; Washington, DC, USA: 2018. [Google Scholar]
4. Anjum F.M., Nadeem M., Khan M.I., Hussain S. Nutritional and therapeutic potential of sunflower seeds: A review. *Brit. Food J.* 2012;114:544-552. Doi: 10.1108/00070701211219559. [CrossRef] [Google Scholar]
5. Designing and Characterization of different Multigrain Breads prepared from Combination of Composite Flours <https://www.researchgate.net/publication/319901790>.
6. Bread Enrichment with Oilseeds. A Review Beatriz de Lamo and Manuel Gómez*
7. Ribotta P.D., Arnulphi S.A., Leon A.E., Añon M.C. Effect of soybean addition on the rheological properties and breadmaking quality of wheat flour. *J. Sci. Food Agr.* 2005;85:1889-1896. doi: 10.1002/jsfa.2191. [CrossRef] [Google Scholar]
8. Zettel V., Hitzmann B. Chia (*Salvia hispanica* L.) as fat replacer in sweet pan breads. *Int. J. Food Sci. Technol.* 2016;51:1425-1432. doi: 10.1111/ijfs.13110. [CrossRef] [Google Scholar]
9. Steffolani E., de la Hera E., Perez G., Gomez M. Effect of chia (*Salvia hispanica* L.) addition on the quality of gluten-free bread. *J. Food Qual.* 2014;5:309-317. doi: 10.1111/jfq.12098. [CrossRef] [Google Scholar]
10. 1111/jfq.12098. [CrossRef] [Google Scholar]
