



## RESEARCH ARTICLE

### NUTRITIONAL ANALYSIS OF VALUE ADDED SOUP FOR THE CARDIOVASCULAR PATIENT

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#### ABSTRACT

Soup is regarded as a ready to use supplementary food-specialized ready to eat food. The experiment was conducted in the research laboratory of the Department of Food Science and Technology, BBAU, Lucknow. Present study explains the nutritive value of value added soup and non- value added soup. The flaxseed is flat and oval with a pointed tip. It is a little larger than a sesame seed and a smooth glossy surface. The seed consists of a hull, endosperm and embryo including the cotyledons. The hull is tough and fibrous. Its colour ranges from pure yellow to deep brown (Nagaraj, 1995). As a basic food worldwide, soup has come to take on significance beyond more nutrition. Flaxseed and soyabean are used in value added soup can therefore be used as a weapon against cardiovascular disease, its high in protein, carbohydrate and dietary fiber. *This review highlights the potential of 'flax seed' as a 'nutraceutical' and its role as a protective and therapeutic medicinal food.* The value added soup is developed by taking flaxseed, soyabean flour, corn flour, carrot, peas, and coriander leaves in different sample(T1,T2) and value added soup are prepared. Sensory evaluation done by panellist of 5 members, and they most accepted sample T2 containing flaxseed. The nutritional analysis the all the nutrient content was assessed in laboratory, in this amount protein and carbohydrate are increased and moisture content decreased. After development the nutrient quality of value added soup is increased protein value from to 29.90. fat from to 24.13gm, one important factor moisture percentage decreased and reach the label of 4.76%, so shelf life is increased. The value added soup is rich in carbohydrate, protein and dietary fiber. So it is good for cardiovascular patient.

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## INTRODUCTION

Cardiovascular disease (CVD) is now the leading cause of death globally and is a growing health concern. Lifestyle-related conditions, such as obesity, hyperlipidemia, type 2 diabetes, and hypertension, are also widespread and becoming more prevalent globally. Although the traditional cardiovascular risk factors have been extensively investigated, dietary factors are also important in the pathogenesis of CVD and may to a large degree determine CVD risk factors such as blood pressure and dyslipidaemia, but have been less extensively investigated. The World Health Organization attributes 30% of all global deaths (i.e. 15.3million) as well as 10.3% of the total DALYs lost in 1998 to CVD. The low- and middle-income countries, because of their much larger population, accounted for 78% of all deaths and 86.3% of daily lost—attributable to CVD world-wide in 1998. One of the strategies to respond to the challenges to population health and well being due to the global epidemic of heart attack and stroke is to provide actionable information for development

and implementation of appropriate policies. As part of such efforts, WHO in collaboration with the US Centers for Disease Control and Prevention (CDC) has produced for the wider audience, "The Atlas of Heart Disease and Stroke" (Lefler and Bondy *et al.*, 2004). Eleven years since the landmark World Health Assembly endorsed the Global Strategy for the Prevention and Control of NCDs to reduce the toll of premature deaths due to CVDs and other NCDs. Heads of State and Government will come together to address the prevention and control of NCDs worldwide at the 2011 High-level Meeting of the United Nations General Assembly on the Prevention and Control of NCDs between 19-20 September 2011 in New York. This is the second time in the history of the United Nations that the General Assembly will meet on a health issue with major socio-economic impact. National leaders are expected to adopt a concise action-oriented outcome document that will shape the international agenda for years to come. The opportunity provided by the High-level Meeting is unprecedented (Ready K. Srinath, 2004). Having one to two alcohol drinks a day may lead to a 30% reduction in heart disease, but above this level alcohol consumption will damage the heart muscle. Certain medicines may increase the risk of heart disease such as the contraceptive pill and hormone

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replacement therapy (HRT). (Jing sun, 2014) soybean can be a good choice for those who love to be vegetarians. Apart from proteins and carbohydrates, they can provide a significant amount of iron, vitamin C, thiamine, folic acid, calcium, magnesium, potassium, zinc and manganese. Soybean provides raw material for a number of industries that produces oil, margarine, cookies, biscuit, candy, milk, vegetable cheese, cosmetics and also in pharmaceutical products. (Dewettinck *et al.*, 2008) Flaxseed, or linseed (*Linum usitatissimum* L.), comes from the flax plant, which is an annual herb. The ancient Egyptians used flaxseed as both food and medicine. The Latin name of flaxseed (*Linum usitatissimum* L.) means "very useful", and it has two basic varieties: brown and yellow or golden (also known as golden linseeds). Flaxseed and its components may improve cardiovascular health because of their numerous attributes. Flaxseed contains 35% of its mass as oil, of which 55% is alpha-linolenic acid (ALA). A promising new study published in the American Journal of Physiology and Circulation Research titled, "The Effects of Dietary Flaxseed on Atherosclerotic Plaque Regression," looked at whether flaxseed in the diet of rabbits is capable of regressing atherosclerotic plaque, the primary pathological process associated with gradual constriction or sudden blockage in the arteries leading to cardiovascular morbidity and mortality. According to the study, "Dietary flaxseed can retard the progression of atherosclerotic plaques. However, it remains unclear whether these anti-atherogenic effects extend to plaque regression." Rabbits were divided into either a regular diet (Group I) or a 1% cholesterol-supplemented diet (Group II), with the latter group showing signs of steady plaque growth, as well as lowered response to stress hormone (norepinephrine) induced vessel contraction and impaired relaxation response to acetylcholine, which are indications of endothelial dysfunction and atherosclerotic plaque progression. Another group (Group IV) was given a 10% dietary flaxseed-supplemented diet, which resulted in "a significant  $\approx 40\%$  reduction in plaque formation ( $P = 0.033$ )," leading the researchers to conclude: "Dietary flaxseed is a valuable strategy to accelerate the regression of atherosclerotic plaques." (Flaxseed and cardiovascular health. Prasad.K 2008). Desirable cut off level for cholesterol is found to be 160mg/dl for Indians. The risk of CHD increases slowly as serum cholesterol values rises from 150 to 200 mg/dl but there is steep rise beyond 200 mg up to 300mg/dl. Hypercholesterolemia occurs when the cholesterol level exceeds 240 mg/dl. The normal serum triglyceride level is 50-150 mg/dl. According to the Global Burden of Disease Study, a 55% rise would occur in DALY loss attributable to CVD between 1990 and 2020 in the developing countries.

Cholesterol	Desirable	Normal risk	High risk
Total cholesterol mg/d	<160	200-240	>240
HDL cholesterol mg/d	>55	35-55	<35
Triglycerides mg/d	<50-150	200-400	>400
LDL cholesterol mg/d	<130	130-160	>160

**Fruit and Vegetables**-The benefits of fruit and vegetable intake appear to be dose related. In addition, frequency of fruit and vegetable intake has been associated with lower CVD risk. The mechanisms by which fruit and vegetables exert their protective effects are not entirely clear but likely include antioxidant and anti-inflammatory effects. Among the possible explanations for this beneficial effect, fruits and vegetables have been found to decrease susceptibility of LDL particles to oxidation. Potassium may also have a protective role on the

incidence of CVD as mounting evidence indicates an inverse association between dietary intake of fruits and vegetables and blood pressure. Several bioactive components in fruits and vegetables such as carotenoids, vitamin C, fiber, magnesium, and potassium act synergistically or antagonistically to promote a holistic beneficial effect. The totality of the evidence supports current dietary guidelines to increase fruit and vegetable consumption to at least five. Soluble fibres including pectins from apples and citrus fruits,  $\beta$ -glucan from oats and barley, and fibres from flaxseed and psyllium are known to lower LDL-C. The mechanisms of their cholesterol-lowering effects are suggested to be the binding of bile acids and inhibition of cholesterol synthesis.

**Soya bean**- Soy is the main source of protein in the Japanese diet, consumed in the form of miso soup and tofu. Soy products are rich in polyunsaturated fatty acids, fiber, vitamins and minerals, and low saturated fat content. Soy products contain many isoflavonoids (genistein, daidzein, glycitin) that are natural phytoestrogens able to inhibit LDL oxidation, thus decreasing the risk of atherosclerosis. Several studies have reported a decrease in susceptibility of LDL particles to oxidation with soy protein consumption. Furthermore, soy protein rich in isoflavones reduced the susceptibility of LDL particles to oxidation in healthy subjects.

## MATERIALS AND METHODS

The experiment was conducted in the research laboratory of the Department of Food Science and Technology, BBAU, Lucknow & in the analysis laboratory of RFARC (Regional Food Analysis & Research Centre) situated in Lucknow. The different tools & techniques used during experimental process were broadly described in this research. The samples taken at the Lucknow area. The Lucknow city stands at an elevation of approximately 123 meters (404ft) above sea level and covers an area of 2528 square kilometers (976 sq mi). - Two samples are taken for experiment in this study, for value added mix soup. One sample is made up of including the flaxseed and the other one is made up without flaxseed. Carrot, peas and corn flour stem was chosen of high fibre content and flaxseed its good for also dietary fiber, protein, vitamin B and omega-3 fatty acid and soyabean its good for fibre and protein. All ingredient was taken in different percentage and mix well. Which was further processed for developing the desire dietary fibre rich and cholesterol free soup, which is beneficial for CVD patient. Then both the samples make powder from by grinder. Both the samples make powder froms. Then we packed in small polybag and then sealed.

## RESULTS AND DISCUSSION

Two sample were prepared in this study, one sample is prepared by the the flaxseed and other one is prepared by the without flaxseed. Both sample had different nutritive value. Sample 2 was high in nutritive value and more accepted for cardiovascular patient.

Ingredients	Sample1 (without flaxseed)	Sample 2
Soyabean flour	150 gm	150 gm
Corn flour (powder)	75 gm	75 gm
Coriander leaves	20 gm	20 gm
Carrot	25 gm	25 gm
Flaxseed (roasted)	-	25 gm
Peas	25 gm	25 gm

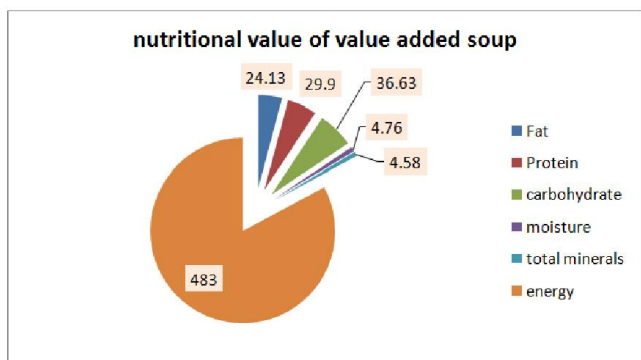
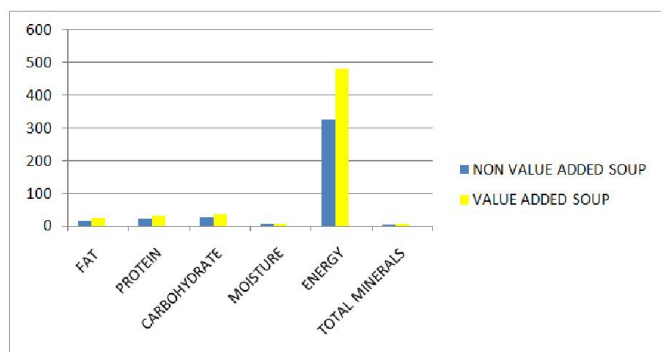
**Nutritive value of value added soup**-Value added soup are assessed in the food analysis laboratory with different specific equipments for each nutritional parameters like protein, iron, carbohydrate, total energy, fat, moistue content.

**Value added soup nutritional value**

Nutritional value	Value added soup	
		Result
Protein,%		29.90
Fat ,%		24.13
Total energy, %		483
Carbohydrate, %		36.63
Toatal minerals, %		4.58
Moisture, %		4.76

Source- RFRAC, Lucknow.

- Energy in value added soup 483 kcal and in non value added soup 325 kcal.
- Fat content in value added soup is 24.13 gm.

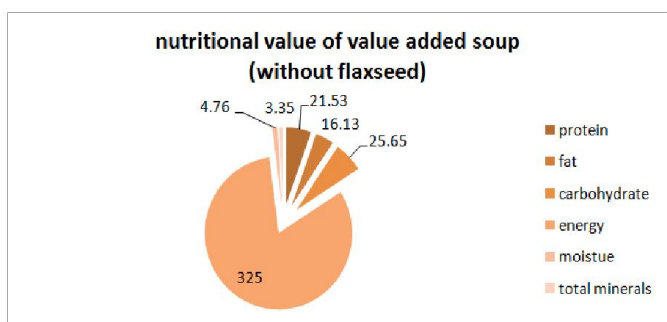


**Summery and Conclusion**

The various ingredients used in the value added soup, soyabean, flaxseed and corn flour is the main ingredient. Soyabean which comprises of various nutritional component, the protein content is 36.49 mg/100 gm, 15.7 mg/100 gm iron content and various other are carbohydrate 30.16 gm, total energy 446 kcal and mineral content is 2.77 gm/100 gm and fat 19.94 gm/gm. The flaxseed nutritional value are protein 18.26gm/100gm ,iron 5.73gm/100gm, and major nutrient facts are energy 534 kcal. Carbohydrate 28.88mg/100gm , fat 42.16 gm/100gm , minerals0.77 gm. Corn flour contains 0.93mg/100 gm protein, carbohydrate contentt is 9.6 mg/100gm which is higher among other ingredients in terms of iron content 1.25 mg and energy content 35 kcal . Fat content is 0.24mg/100gm and iron is 0.3mg. Carrot nutritional value are protein 2.13mg/100gm and major nutrients facts carbohydrate content is 3.02 mg/100 gm. Fat cotent is 0.52 mg/100 gm and energy content is 23 kcal. Total mineral content is 6.7 mg/100gm. Value added soup produced by experimental design surface methodology. Ingredients are used are flaxseed, corn flour, soyabean, carrot, peas, corriander leaves. Take different percentage of these ingredient, after the drying and grinding , mix together in different proportion. Nutritive value of protein and carbohydrate incresed in the prepared value added soup when it is assessed in the laboratory, these nutrients were the major area on which study was done and to enhance the value added protein and carbohydrate content. Other components also increased in the value added soup. The shelf life of this product also increase because the moisture content was decreased.

**Value added soup (without flaxseed)**

Nutritional value	Value added soup (without flaxseed)	
		Result
Protein,%		21.53
Fat ,%		16.13
Total energy, %		325
Carbohydrate, %		25.65
Toatal minerals, %		3.25
Moisture, %		4.76



**Comparative graphical representation**

By comparative graph we can see the the difference of values side by side from different samples and how much fluctuations are present in two or more different sample, and it clearly represents the values accordingly.

- From below graph the nutrients content are present in comparing way, from two different samples.
- The protein content in value added soup is 29.90 gm in compare to non value added soup which is without flaxseed contains 21.53 gm
- Carbohydrate in value added soup is 36.63 gm and in other soup 25.65 gm

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