

# A Project Report On Soy Nuts - A Healthy Alternate to Peanuts

Soybean is one of a very few plants that provide a high quality protein with minimum saturated fat. Soybean helps people feel better and livelonger with an enhanced quality of life. Soybean contains all the macronutrients required for good nutrition, as well as fiber, vitamins, and minerals. Soybean protein provides all the essential amino acids in the amounts needed for human health. Almost 40% of the calories from soybean are derived from protein, making soybeans higher in protein than any other legumes and many animal products. In addition to the quantity it is the quality of soy protein that is most remarkable. Health professionals consider soy protein as a very superior protein. The amino acid pattern of soy protein is virtually equivalent in quality to that of milk and egg protein. The 1990's FAO/WHO protein evaluation committee put soy protein on a par with egg and milk protein and ahead of most meat protein. Unlike many other good sources of protein, soybean not only has a higher percentage of oil but also a high quality fatty acid profile. It



has a low saturated fat content with a high amount of polyunsaturated fatty acids and is a readily digestible source of essential fatty acids. Soybean oil is cholesterol-free and rich in omega-3 and 6 fatty acids similar to those found in fish oil, which has anti cancer properties. Soybeans, especially the outer hull, are an excellent source of dietary fiber. Soybeans contain both soluble and insoluble fiber. Soluble fiber may help lower serum cholesterol and control blood sugar. Insoluble fiber increases stool bulk, may prevent colon cancer and can help relieve symptoms of some digestive disorders. Compared to other legumes, soybean has more than two times the daily-required amount of most minerals, especially calcium, iron, phosphorus and zinc, and soybean is very low sodium content.

Soybeans are the only food source with nutritionally significant amounts of one important phytochemical called isoflavones. In various experiments isoflavones directly or indirectly have been found to lower cholesterol, inhibit bone deterioration, relieve menopause symptoms and possess anti-cancer activity. Some research shows that just one serving of soy foods, such as a ¼ cup of soy nuts, is sufficient to exert positive clinical effects. Soy foods are very versatile as they can supplement, compliment, or replace a variety of dishes, drinks, and even snacks. Roasted soy nuts are an excellent snack, snack mix component or salad topping and are available in an assortment of flavors. Roasted soy nuts offer great consumer appeal because of the numerous nutritional and health benefits they offer.

Soy nuts are whole soybeans that have been soaked in water and roasted until browned. Soy nuts, like whole soybeans, are excellent source of protein, fat and isoflavones. Soy nuts can be eaten as snacks. They can be manufactured either by dry roasting or deep-frying. They can be eaten as an alternate to peanuts, which are expensive, and pose the problem of aflatoxins. Soy nuts provide higher protein at lower cost. Roasted soy nuts are found to have at least 60% less fat than peanuts. Most conventional nuts are incredibly high in fat but soy nuts have less fat and more protein compared to conventional nuts. Soy nuts are similar in texture and flavor to peanuts and are far less expensive than peanuts.

Many soy foods, including roasted soy nuts, are rich in calcium. A ¼ cup of serving of roasted soybeans contains 69 milligram of calcium, which is about 10 percent of an adult's recommended daily intake. Other calcium-rich soy foods include tofu, tempeh, textured vegetable protein and soymilk fortified with calcium. Calcium in soy foods is also readily absorbed the body.

All whole plant foods contain dietary fiber. A fiber-rich diet is very important in reducing risk of certain types of cancer and heart disease. The National Cancer Institute recommends Americans consume 25 to 30 grams of fiber a day. Soybeans, especially roasted soy nuts, excellent sources of fiber: ¼ cup of roasted soy nuts provides eight grams of fiber.

The protein in soy is "complete" protein of highest quality, equal to that of meat and milk products. Soybeans are exceptionally high in protein, therefore, soy is an inexpensive way add protein to your diet. About 40 % of the calories in soybeans come from protein, while other beans contain approximately 20 - 30 percent protein.

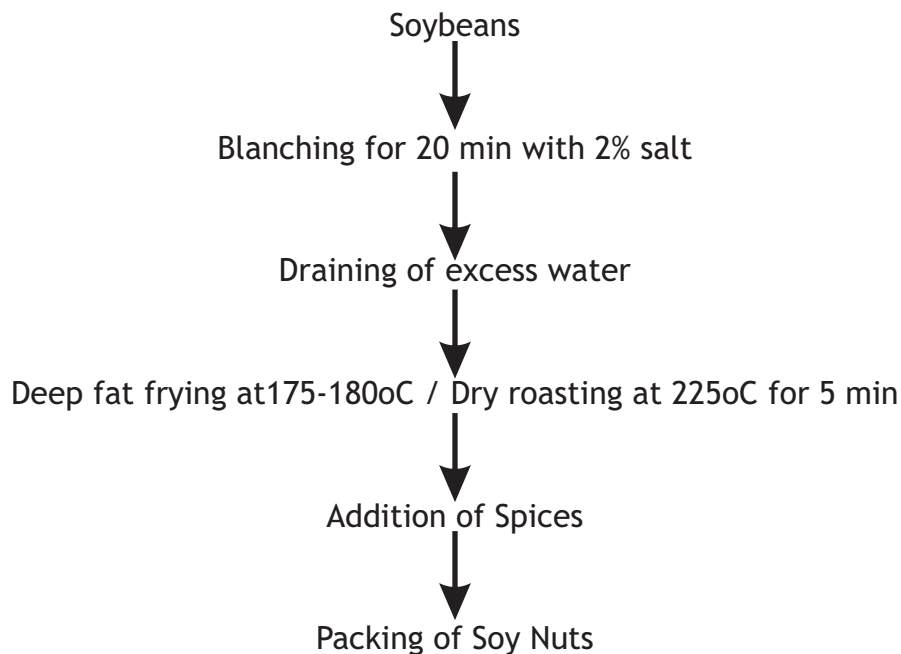
**Table: 1 Comparison of nutritive value of Major nuts with soynuts**

	Calories	Protein	Fat	Carbohydrate
Soy Nuts	500	37.1	26.4	28.2
Almonds	618	15.4	53.6	26.4
Cashew Nuts	607	31.8	49.3	18.2
Peanuts	607	17.9	53.6	25.0

**Table 2: Composition of Oil Roasted and Dry Roasted Soy Nuts**

Component	Oil Roasted	Dry roasted
Moisture	2	1
Energy	474	450
Protein	35.2	39.6
Fat	25.4	21.5
Carbohydrate	33.6	32.7
Crude fiber	4.6	5.4
Calcium	3.9	4.0
Zinc	3.1	4.8

**Figure 2: Flow Diagram for Manufacture of Soy Nuts**



### **Soy Nuts vs Peanuts**

Soy Nuts have 60% less fat than peanuts with two times more protein than peanuts. Soy nuts have less incidence of aflatoxins and are less expensive than peanuts with all the health benefits of soybean.

### **Soy Nut Butter**

Soy nut butter is made from soybeans that have been roasted (soy nuts), which are then crushed and blended with soybean oil and other ingredients. Soy nut butter has a slightly nutty taste, significantly less fat than peanut butter and provides many other nutritional benefits as well. Although not a low-fat food, soy nut butter is nonetheless about one-third lower in fat than regular peanut butter, and is high in protein. Soy nut butter should be stored in an air-tight container. It can be stored in the refrigerator or cabinet. Use soy nut butter as a replacement for peanut butter in your favorite recipes. Soy nut butter is generally lower in fat than peanut butter. Serve soy nut butter as a dip with fresh vegetables and crackers. Soy nut Butters contain no peanuts or tree-nuts and have 30% less fat than regular peanut butter.

## Problems and possible causes in making soy nuts

**Problem:** Food is limp with greasy taste and oil dripping from it

**Causes:**

- Temperature of oil too low;
- Over loading of the fryer;
- Allowing nuts to remain in the fryer after they are done;
- Improper draining

**Problem:** Exterior of nuts look 'done' while interior is partially raw

**Causes:**

- Oil Temperature too high;
- Frying time too short

**Problem:** Nuts have objectionable fatty taste

**Causes:**

- Poor filtration;
- Low turn over of oil;
- Use of poor quality oil;
- Excessive oil absorption

**Problem:** Nuts are not cooked or browned in the usual amount of time

**Causes:**

- Oil temperature too low;
- Over loading of beans;
- Fryer has slow recovery rate

**Problem:** Oil takes on 'tar' like appearances

**Causes:**

- Overheating of oil;
- Hot spots in the heating system;
- Soaps from the cleaning operation entering the oil system

**Problem:** Smoke visibly coming from the oil

**Causes:**

- Oil Temperature too high;
- Hot spots in the heating system;
- Soaps from the cleaning operation entering the oil system;
- Drip back from the exhaust system

## Cost Benefit Analysis of Medium-Scale \*

<b>Capital Investment</b>		
Cost of Equipment (Capacity 200 kg/hr)	500,000	
Cost of coating accessories	100,000	
Working capital	50,000	
Packaging equipment	100,000	
Pre operational expenses	25,000	Loan 85% of CI
<b>Total</b>	<b>775,000</b>	

<b>Monthly expenses 1 shift/day</b>	<b>100% capacity</b>	<b>50% capacity</b>
Interest on Loan @ 12% pa	-	-
Rent	10,000	10,000
Other Expenses	5,000	5,000
<b>Sub-Total</b>	<b>15,000</b>	<b>15,000</b>
<b>Manpower</b>		
Two marketing executives 2*5000	10,000	10,000
Two Production in-charges 2*4000	8,000	8,000
Raw material	-	-
Cost of Electricity @ Rs. 3.5/KW	20,000	10,000
Cost of additives (salt, oil, spices, etc)	30,000	15,000
Water, Sewer & Maintenance	7,000	4,025
Depreciation @ 15% pa	8,750	8,750
Publicity Rs. 0.5 per pack	200,000	100,000
Misc. Expense	20,000	20,000
<b>Sub-Total</b>	<b>303,750</b>	<b>175,775</b>
<b>Total Expenses</b>	<b>318,750</b>	<b>190,775</b>

Production/month	20000	10000
Cost of Production (rs/kg)	15.94	19.08
No of packets per month (50 gm)	400,000	200,000
Cost of Packaging (Rs. /pack)	200,000	100,000
Net Cost of Production/pack	1.30	1.45
Sales Tax 8%	0.40	0.40
Profit margin 15%	0.75	0.75
Dealer price (margin 10% )	2.95	3.10
Retailer price (margin 20%)	3.95	4.10
MRP	5.00	5.00
<b>profit per month</b>	<b>300,000</b>	<b>150,000</b>
Net profit per month		