

Multi pulse and vegetables pre soup mix

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Abstract- The present work was aimed to prepare dried vegetarian soup supplemented which is rich in micro-nutrient and is demand of any country. Legumes are important constituents of Bangladeshi diet and provide a considerable portion of dietary proteins, minerals and vitamins. It is the ready to eat soup powder which is prepared from legume and vegetables in the laboratory and can provide an improved nutritional status. Protein source was derived from Legumes and vegetables paste which was used as a mineral source. This product is made by the drying process. The basic aim of this product is to formulate instant mix vegetable and pulse soup with natural herbs like curry leaves, coriander leaves etc. The herbal formulation increases antioxidant quality of soup.

INTRODUCTION

The trend in consumption of ready to eat product is increasing due to increasing number of working women population contaminant with the increase in per capita income. Lack of time, hectic schedules, easy commercially available, nutritive and minimally processed with longer shelf-life. Soup is a liquid which is prepared from vegetables, pulses and some other thickening agents. Basically there are 2 types of soups like thick soup and clear soup. Thick soups are prepared by mixing the powder of cereals or vegetables, cream and combine with any of the thickening agents. Clear soups are made from clear extracts of plant parts, some seasonings until when the all flavors are released. Soup is a liquid food consisting of meat, sea-food, vegetable, cereals, poultry etc. They play an important role on the menu and are regarded as appetizer as they stimulated the appetite for the heavier food to follow. On the menu they are served as the first course, if horst oeuvre is not being served. If horst oeuvre is served then the soup is served as a second course.

SPECIAL POINT FOR THE SERVICE AND PREPARATION OF SOUP

- 1.) Special first class clean, strong flavorful stock should be used as it would help in producing good first class soup.
- 2.) If there is a heavy Entrée, the soup should be thin of light.
- 3.) If a heavy soup served, the portion should be small.
- 4.) Garnish should be small and dainty so that they can be picked up easily by a soup spoon.
- 5.) Serve hot soup piping hot, and cold soup is very cold or chill. vi. Accompaniment of the soup should be of a crispy characteristic (Melba bread/toast, various crackers, bread sticks, bread role etc.)

TYPES OF SOUPS

Thick Soup: Puree (Passed):- A soup thickens by its main ingredient and passed through a sieve. Milk or little bit of flower blended with and is added to prevent the puree from separately but not as a thickening. The consistency of the soup should be light creamiest. Generally served with croutons. Example: - Puree-de-lentils, Puree-de-tomato.

Cream soup:- A soup cream consistency which generally made by vegetable, puree mixture with béchamel sauce. It can be finished with cream and milk is used to dilute and achieve the correct consistency. Example: - Various cream soup like cream of tomato, cream of chicken, cream of asparagus. **Valuate soup:-** A thick made from white stock and blond roux, finish with egg yolk and cream. Example: - Chicken valuate, almond valuate.

Bisque soup:- This are thicken tight fish related soup. Basically made from shellfish and finish stock and thicken with cream.

OBJECTIVES

- To study type of dehydrated and ready to eat product.

- To study the important properties and benefits of radish leaves and sprouted horse gram.
- To assess the sensory parameters of the developed products.
- To find out the microbial analysis of mix soup powder.
- This product is less time and labor taking, nutritious and cost is low.

REVIEW OF LITERATURE

Grain legumes are crop plants belonging to the legume family with papilionaceous flowers and pods containing seeds. Legumes fix atmospheric nitrogen by symbiosis with *Rhizobium*, which provides them organic proteins. Grain legumes are cultivated primarily for their seeds, which are rich in carbohydrate and protein. Legume grains contain 20 to 25% protein by weight, which is double the protein content of wheat and three times that of rice grains. For this reason, pulses are sometimes called "poor man's meat".

1.) **Chickpea:** A valuable grain legume: Cultivated chickpea, *Cicer arietinum* L., is a self-pollinated, diploid ($2n=2x=16$) annual pulse crop with a genome size of 740 Mbp (Arumuganathan and Earle 1991). Globally it is the third most important food legume grown in over 40 countries representing all the continents. Chickpea has majority of its cultivation in dry areas of the Indian subcontinent (Saxena, 1990) and India is the principal chickpea producing country with a share of 90% in this region. Though, chickpeas are grown and locally consumed, India is also the world's largest importer of chickpeas accounting for about 20% of global imports.

Morphology: Chickpea (*Cicer arietinum* L.) has a deep tap root system, which enhances its capacity to withstand drought conditions. It is well adapted to areas having relatively cooler climatic conditions and a low level of rainfall. The aerial portion is profusely branched, erect or spreading, reaching a height of 0.2-1 m, appearing glandular pubescent, olive, dark green or bluish green in color. Leaves are imparipinnate, glandular-pubescent with 3-8 pairs of leaflets with

rachis ending in a terminal leaflet. Leaflets are ovate to elliptic, 0.6-2.0 cm long, 0.3-1.4 cm wide; margin serrate, apex acuminate to aristate, base cuneate; stipules 2-5 toothed or absent. The inflorescence consists of solitary flowers, sometimes two per inflorescence and borne on 0.6-3 cm long peduncles, 7-10 mm long calyx; while the bracts are triangular or tripartite; the corolla is 0.8-1.2 cm long and varies from white, pink, purplish (fading to blue), or blue.

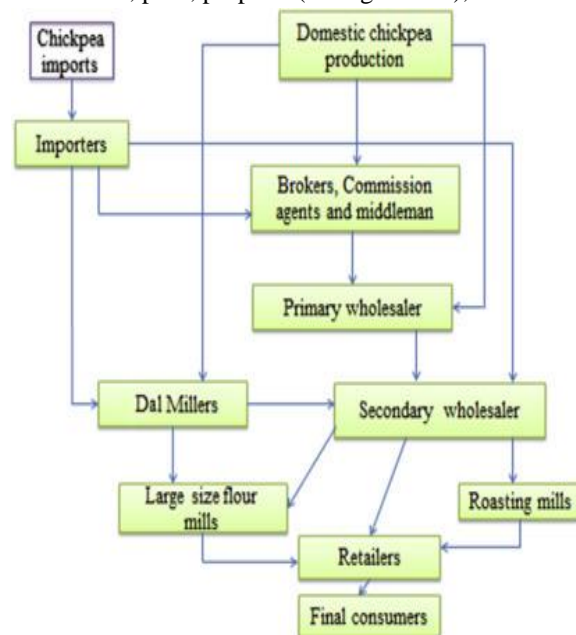


Figure-I

Origin and domestication: Chickpea (*Cicer arietinum* L.) is one of the legume crops domesticated in the Old World. Most probably, it has originated in an area of south-eastern Turkey and Syria. It was first grown in Turkey about 7,000 B.C. It is believed to have been domesticated from *C. reticulatum* Ladizinsky, a closely related wild species. Three wild annual *Cicer* species, *C. bijugum*, *C. echinospermum*, and *C. reticulatum*, closely related to chickpea, cohabit with the cultivar in this area. Chickpea is not known to occur in the wild and some of the earlier reports on its mistaken wild status could be due to volunteers or escapes from cultivation. After domestication in the Middle East, the crop spread throughout the Middle East, the Mediterranean region, India, and Ethiopia (Ladizinsky 1975; van der Maesen 1987).

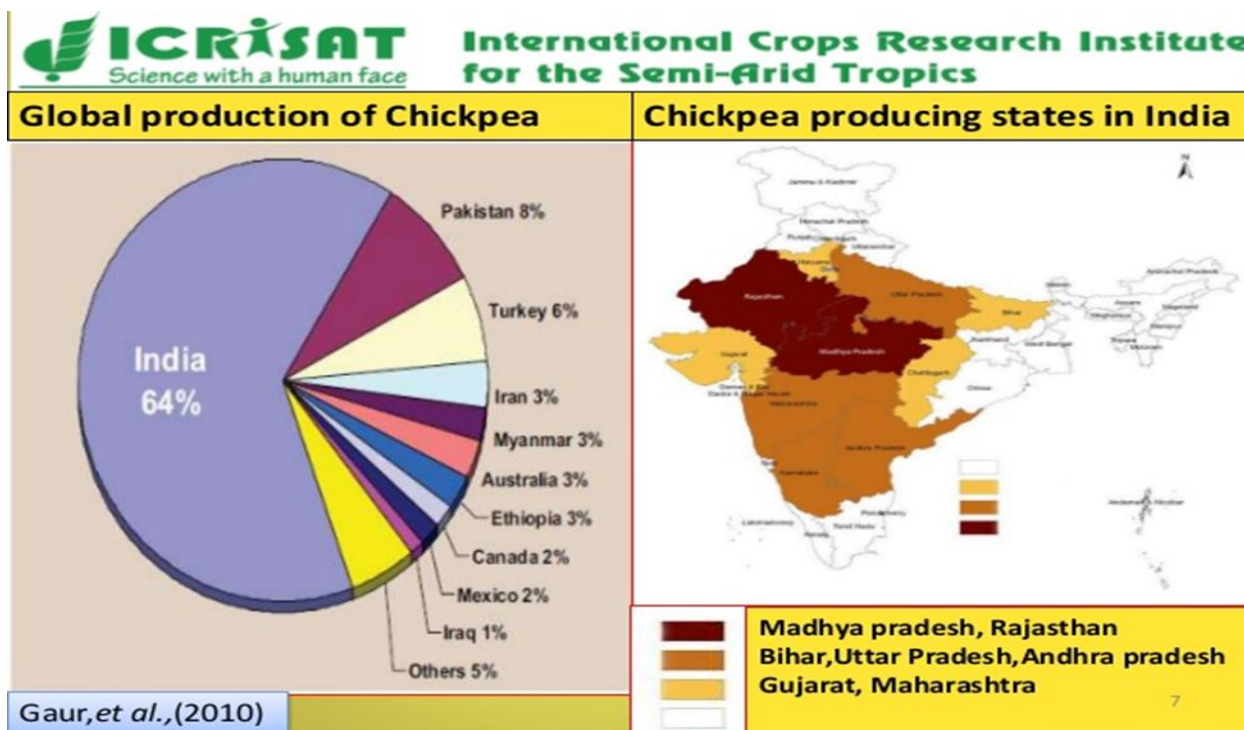


Figure 2

2.)Pigeon pea: The Pigeon pea (*Cajanus cajan*) is a perennial legume from the family Leguminosae. Since its domestication in South Asia at least 3,500 years ago, its seeds have become a common food grain in Asia, Africa, and Latin America. Today, pigeon peas are widely cultivated in all tropical and semitropical regions of both the old and the new worlds (http://en.wikipedia.org/wiki/Pigeon_pea). As per as uses and nutritional values are concerned, pigeon pea is useful in various ways both as human food and animal feed. As human food pigeon pea is used as „dhal’ (split seed without seed coat), whole seed, and green vegetable to supplement cereal-based diets. The seed by-products from the „dhal’ mills are used as animal feed. Pigeon pea leaves are used as dry or green fodder. Stalks of pigeon pea are useful for making baskets, constructing huts, hedges, and binding material (Faris and Singh 1990). In India, pigeon pea is the second most important food legume crop after chickpea. It is a multipurpose crop, being grown not only for grain but also for fuel and fodder. It is grown under a wide range of cropping systems on the Deccan Plateau (DP) in India (Reddy et al., 1998).

CULTIVATION OF PIGEONPEA

Today, pigeon pea is widely cultivated in all tropical and semitropical regions of both the Old and the New

Worlds. World production of pigeon peas is estimated at 4.49 million tons. Pigeon pea is an important legume crop of rainfed agriculture in the semiarid tropics. The Indian subcontinent, eastern Africa and Central America, in that order, are the world's three main pigeon pea-producing regions. Pigeon peas are cultivated in more than 25 tropical and subtropical countries, either as a sole crop or intermixed with cereals, such as sorghum (*Sorghum bicolor*), pearl millet (*Pennisetum glaucum*), or maize (*Zea mays*), or with other legumes, such as peanuts (*Arachis hypogaea*). Being a legume capable of symbiosis with Rhizobia, the bacteria associated with the pigeon pea enrich soils through symbiotic nitrogen fixation. Pigeon peas can be of a perennial variety, in which the crop can last three to five years (although the seed yield drops considerably after the first two years), or an annual variety more suitable for seed production. The crop is cultivated on marginal land by resource-poor farmers, who commonly grow traditional medium- and long-duration (5–11 months) landraces. Short-duration pigeon peas (3–4 months) suitable for multiple cropping have recently been developed. Traditionally, the use of such input as fertilizers, weeding, irrigation, and pesticides is minimal, so present yield levels are low (average = 700 kg/ha).

Greater attention is now being given to managing the crop because it is in high demand at remunerative prices.

Pigeon peas are very drought-resistant and can be grown in areas with less than 650 mm annual rainfall. With the maize crop failing three out of five years in drought-prone areas of Kenya, a consortium led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) aimed to promote the pigeon pea as a drought-resistant, nutritious alternative crop.

Genome Sequence:

The pigeon pea is the first seed legume plant to have its complete genome sequenced. The sequencing was first accomplished by a group of 31 Indian scientists from the Indian Council of Agricultural Research. It was then followed by a global research partnership, the International Initiative for Pigeonpea Genomics (IIPG), led by ICRISAT with partners such as BGI–Shenzhen (China), US research laboratories like University of Georgia, University of California-Davis, Cold Spring Harbor Laboratory, and National Centre for Genome Resources, European research institutes like the National University of Ireland Galway. It also received support from the CGIAR Generation Challenge Programme, US National Science Foundation and in-kind contribution from the collaborating research institutes. It is the first time that a CGIAR-supported research center such as ICRISAT led the genome sequencing of a food crop. There was a controversy over this as CGIAR did not partner with a national team of scientists and broke away from the Indo American Knowledge Initiative to start their own sequencing in parallel.

3. Matpe Beans: Also known by other names like Black gram, Urad and white lentil and extensively used in Southern Asia. The skin is black in color and is white on the inside. It is most commonly used in the following forms:

- Whole
- Dehusked (whole or split)
- Flour
- Paste

This bean is also very versatile:

- Fritters (this is used in an amazing variety of fritters with other flours in South Asian cuisine)
 - As soups and as an accompaniment to rice and tortillas.
 - Indian crepes, pancakes, steamed lentil cakes
- Matpe Beans are also an excellent source of proteins, dietary fiber, Calcium and Vitamins and very low in sodium, fat.



Figure 3

Health Benefits:

Horse gram: Prevents Constipation, common cold, weight loss, Diabetes. They are rich in antioxidant like flavonoids and polyphenols. They also contain diuretic and astringent properties. The seeds are rich in fiber which helps the body to be active. It eliminates the bad cholesterol that is stuck in the heart veins and reduces the risk of blockages.

Table 1: Nutritive value of Horse gram as per 100 gms:

Nutrients	Value per 100 gms
Energy	321Kcal
Protein	22.0gms
Calcium	287mg
Fat	0.5gm
Iron	6.77mg
Phosphorous	311mg

(Gopalan,C.et al.1991)

Radish leaves: Prevent diabetes, essential vitamins and minerals, Increases immunity, reduces fatigue, and Treats piles. The radish greens contain more nutrition than its white root. They have antioxidant like anthocyanin which can destroy the free radicals which would otherwise attack your heart and leads to heart problem including stroke.

Table 2: Nutritive value of Radish Leaves as per 100 gms:

Nutrients	Value per 100gms
Energy	38 Kcal
Protein	3.9gms
Calcium	310mg
Phosphorous	60mg
Fat	0.6gm
Iron	18.3mg

(Gopalan,C.et al.1991)

Pumpkin: Beta carotene and other vitamins present in pumpkin help in regeneration of cells, reduces hypertension, Zinc found in pumpkins boosts the immune system and reduce the risk of osteoporosis. It contain high amount of Vit. A, Lutein, Zeaxanthin can protect your eyesight.

Table 3:

Nutritive value of Pumpkin per 100 gms:

Nutrients	Nutritive value as per 100 gms
Energy	57Kcal
Protein	4.6gms
Calcium	392mg
Iron	-
Phosphorous	112mg
Fat	0.8gm

(Gopalan,C.et al.1991)

Bengal gram: Boosts energy. Improves digestion, Prevents diabetes. It is also known as chana dal which is rich in Vit.B complex which plays an important role in glucose metabolism. It extracts energy from our food and converts it into ATP which is the biochemical form in which our body stores and uses energy.

Table 4:

Nutrients	Nutritive value as per 100 gms
Energy	372Kcal
Protein	20.8gms
Calcium	56mg
Phosphorous	331mg
Iron	5.3mg
Fat	5.6gms

(Gopalan,C.et al.1991)

Carrot: The fiber in carrots can help keep blood sugar levels under control. And they are loaded with Vit A and beta-carotene, which can lower diabetes risk. They can strengthen your bones. Carrots have calcium and

vitamins K both are important for bone health. With their high fiber content, they can help ease constipation and keep you regular. Antioxidants have been proven to fight off harmful free radicals in your body, and that can make you less likely to have cancer. The two main types of antioxidants in carrots are carotenoids and anthocyanins. Carotenoids give carrots their orange and yellow colors, while anthocyanins are responsible for red and purple coloring.

Table 5:

Nutrients	Nutritive value as per 100 gms
Energy	48Kcal
Protein	0.9gm
Calcium	80mg
Phosphorous	530mg
Iron	1.03mg
Fat	0.2gm

(Gopalan,C.et al.1991)

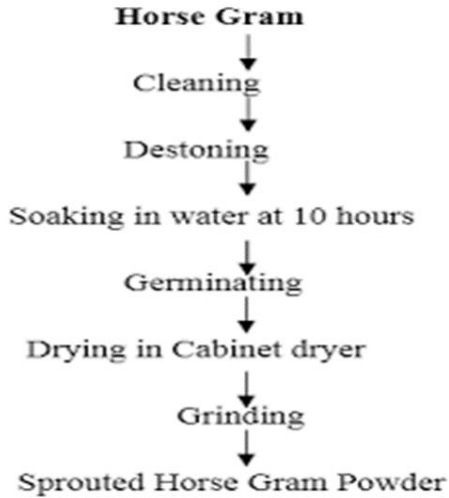
Tomato: Tomatoes are an excellent source of vitamin C and other antioxidants. With these components, tomatoes can help combat the formation of free radicals. Free radicals are known to cause cancer. Maintaining a low sodium intake helps to maintain healthful blood pressure. However, increasing potassium intake may be just as important due to its widening effects on the arteries. An increase in potassium intake, along with a decrease in sodium intake, is the most important dietary change Trusted Source the average person can make to reduce their risk of cardiovascular disease. Eating foods that are high in water content and fiber, such as tomatoes, may help hydration and support normal bowel movements. Tomatoes are often described as a laxative fruit.

Table 6: Nutritive value of Tomato as per 100gms:

Nutrients	Nutritive value as per 100 gms
Energy	23Kcal
Protein	1.9gms
Calcium	20mg
Fat	0.1 gm
Phosphorous	36mg
Iron	1.8mg

(Gopalan,C.et al.1991)

Method and materials for development of soup mix powder. (Phase 1):



Preparation of leaves powder.(Phase 2):

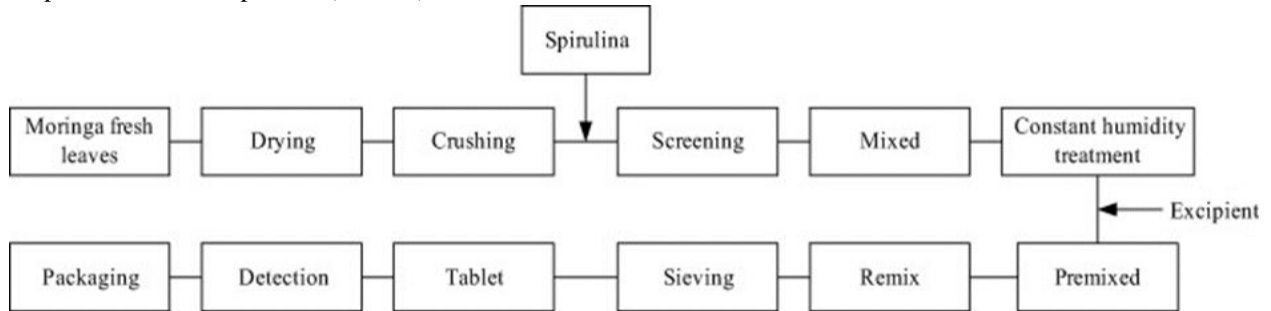


Figure 6:



Figure 7:

Figure 4



Figure 5:

Preparation of spice powder (Phase 3):



Figure 8:



Figure 9

Procedure for the preparation of soup(Final step):

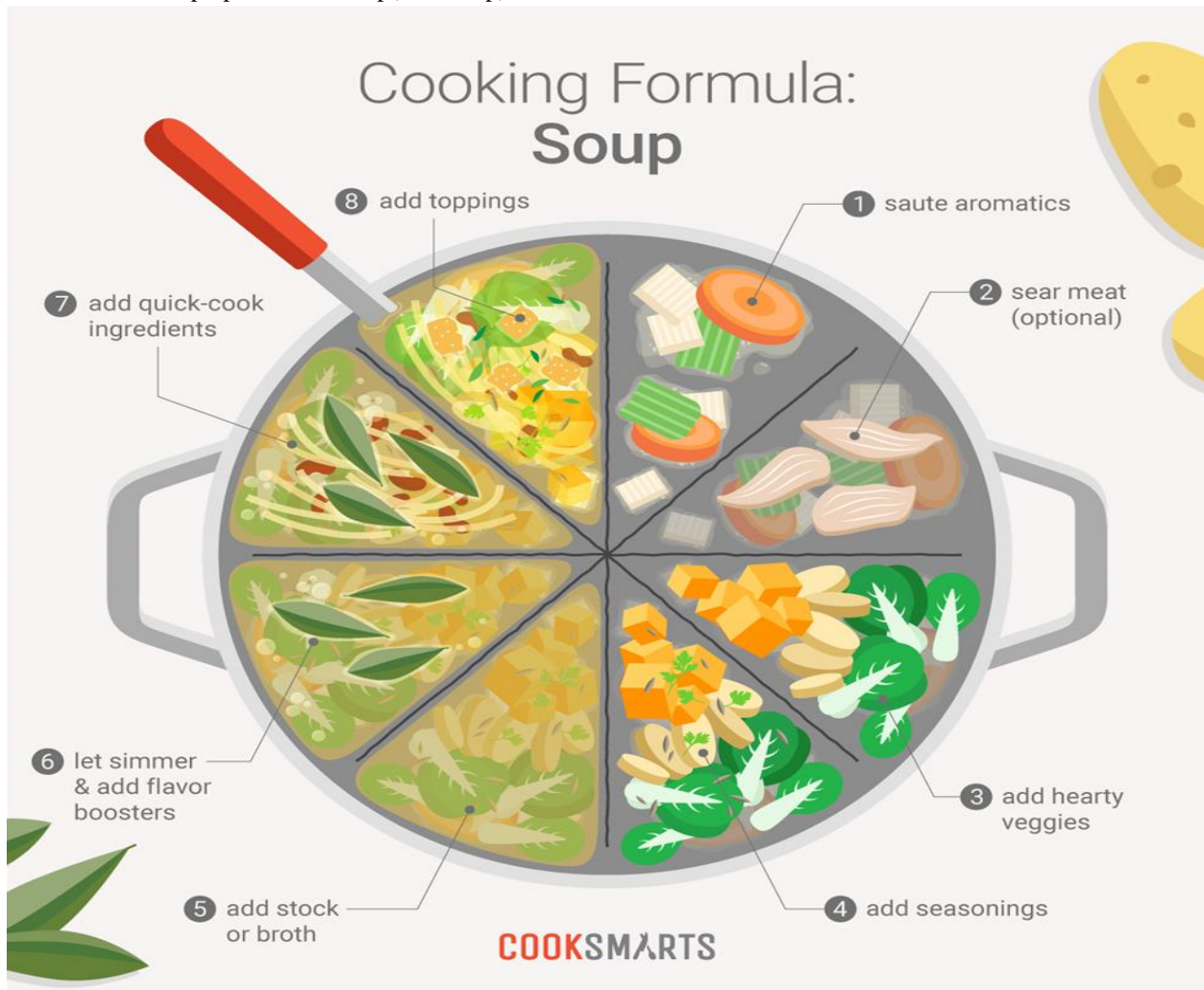


Figure 10



Figure 11:

Packaging and storage:

- This product was packed in polythene packets weighing about 20 gm. each.
- All the packets were kept at room temperature and the shelf life of the product is approx. 8months.

- The stored sample were analyzed after every 1month interval of time for checking the nutritive value, moisture content, crude fiber and ash content.
- It uses a freeze drying process to protect the nutrients.



Figure 12:

RESULTS AND FINDINGS

The protein of the soup powders prepared in the laboratory varies from 18.78 to 19.40% . It is assumed that the poly packs having thickness of (0.1mm) are not impermeable to air. There is an increase in moisture content. It is expected that if vacuum packaging or high density polypropylene(HDPE) packets can be used to inhibit the moisture content.

This soup powder is rich in protein and calorie content and can act as a supplementary food for malnourished or undernourished people. This legume vegetable soup requires only 5 min for cooking. Like all plant products it contains insignificant amount of cholesterol. So this soup will be suitable for Hypertension patients, diabetes, obesity, babies and for all class of people.

Table 7:

Ingredient	Amount in gms	Energy KCal	Protein gms	Fat Gms	Carbohydrates Gms	Iron Mg
Horse gram	10	32.1	2.2	0.05	5.72	0.677
Radish leaves	10	2.8	0.38	0.04	0.79	0.009
Pumpkin	20	5.0	0.44	0.02	0.92	0.088
Bengal gram	10	37.2	2.08	0.27	5.98	0.53
Carrot	25	28.2	7.08	1.2	8.92	0.95
Tomato	20	4.6	0.38	0.12	0.72	0.36
Total		109.9	12.56	1.7	23.05	2.614

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% 20(ISPSC)% 20tested% 20various% 20recipe,processed% 20products% 20from% 20pigeon% 20pea.