



Formulation of Instant Soup Mix Using Dehydrated Beetroot Powder

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ABSTRACT

Formulation of instant soup mix powder using dehydrated beetroot powder with adding dehydrated onion powder, dried garlic, ginger powder. *Beta vulgaris L.* (Beetroot) is rich source of minerals, it also contains antioxidants properties like phenol. Red beetroot helps to protect against heart disease. As beetroot has high moisture content therefore the best way to preserve them is to dehydrate. The drying of beetroot extends the shelf life of the mix as compared to the fresh beetroot. The drying of beetroot and other vegetables was done using tray drying at 60°C to extend the shelf life. The dehydrated onion and corn flour was used as thickening agent in it. The optimum level of onion powder was added in beetroot powder with other ingredients like ginger, garlic, salt, spices like cloves etc. The mixture was boiled in hot water. The sensory evaluation was carried out using nine point hedonic scale. The main targeted group for consuming the soup are who having low hemoglobin level in their body.

Key words: beetroot powder, dehydration, onion powder.

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INTRODUCTION

Soup is one of the traditional foods that can be classified as an appetiser for colds and illnesses and a hot food. In the modern world, soup preparation is a time-consuming process, so commercial instant soups such as canned, dehydrated, and frozen soups have replaced homemade soups. Instant soups can meet the body's energy and nutritional needs, are very convenient to prepare, and can be served quickly, making them a potential breakfast alternative [1]. Dry soup mixes containing vegetables in various forms have several advantages over canned soups [1]. A popular soup that is easy to make among all dehydrated products, instant mixes have gained popularity in recent years due to their convenience, hygiene, long shelf life, and portability [1]. Beetroot powder (*Beta vulgaris*) is used as a natural red food colouring in dry mixes (soups, Indian curry mixes), sweets, jams, and jellies [2]. The bright red colour of beets comes from a group of red pigments known as betalains. Betalains are antioxidants with great health benefits [2]. Colorant powders are typically manufactured by spray drying or tray or belt drying. Several research groups have reported the spray drying of beet extracts. Spray drying requires the addition of malt dextrin or other binders as a prerequisite. The spray-dried powder is lightened by malt dextrin and partly by pyrolysis at elevated temperatures. Also, the hygroscopic nature of powders is another limitation that can lead to operational inconveniences such as clump formation during mixing, blending, rehydration, etc. This makes it an attractive option for farmers in developing countries [2]. Some of the advantages of convection drying beet roots are much less investment and higher yields, better quality products, and a more nutritious end product [2]. The onion (*Allium cepa*) is the most commonly used vegetable in food processing worldwide, especially in tropical countries. Although it is classified as a vegetable, it has special qualities that add flavour and aroma to foods, and hence it is mainly used in India for cooking and culinary preparation [3].

MATERIAL AND METHODS

As we know Beets are a low-fat vegetable, but they are high in carbohydrates, starch, soluble fiber, and protein and are a moderate-calorie product. Beetroot is rich in vitamins C, A, E, and K. B vitamins (B1 thiamine, B2 riboflavin, B3 niacin, B5 pantothenic acid, B6 pyridoxine, B9 folic acid, and B12 cyanocobalamin), as well as folic acid, triterpenes, sesquiterpenoids, carotenoids, coumarins, flavonoids (tiliroside, astragalin, rhamnocitrin, rhamnetin, kaempferol), betalains, and phenolic compounds. Beetroot soup is a unique and surprisingly delicious way to enjoy the nutritional benefits of beets.

Materials:

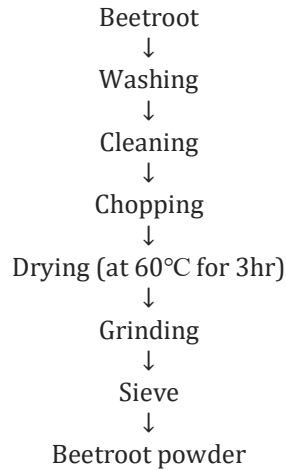
The material for the experiment was collected from the market of the satara.

Beetroot, onion, garlic, ginger, chilli, spices

Methods:

The required methods are discussed below in flow sheet.

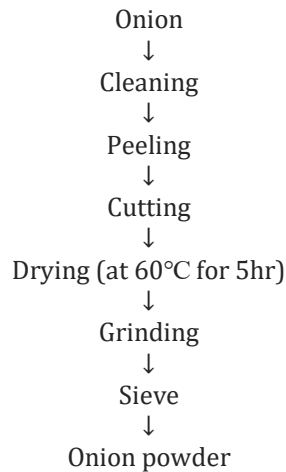
Development of Beetroot powder:



Procedure:

- Wash the beetroot and dry with paper towel.
- Use peeler to remove skin.
- Slice the beetroot as thin as possible.
- Lay the beetroot slices on the dehydrated trays spread evenly on the tray.
- Dehydrate it till all moisture is removed from it.
- Grind it properly and Sieve it.

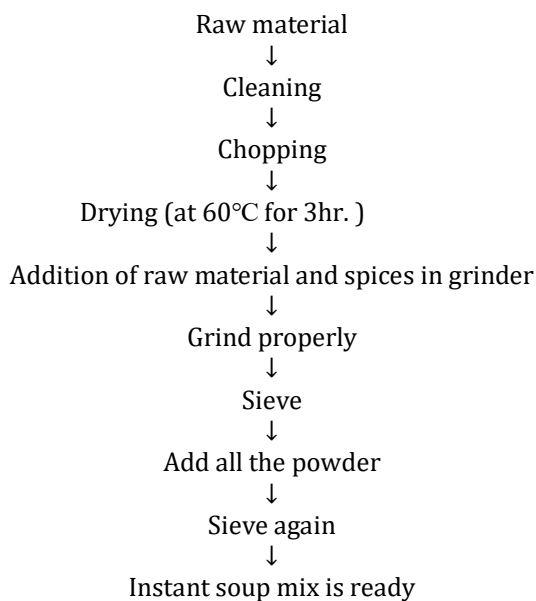
Development of onion powder :



Procedure:

- Take onion and peel them.
- Slice the thin as possible.
- Place them evenly on the dehydrated tray.
- Dehydrate it till all moisture removes from the onion.
- Grind it properly and Sieve it.

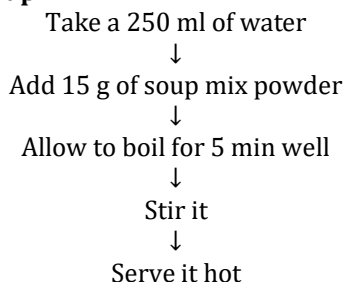
Development of spices powder :



Procedure:

- Collect all the raw materials wash and dry them with paper towel
- Cut it into small pieces as possible
- Spread evenly on the dehydrating tray
- Dehydration of raw material using tray dryer and grinding them.
- mix all other powder instant beetroot soup mix is ready

Formulation of prepared instant soup mix :



Procedure:

- Take 250 ml of water Add 15 g of soup mix powder.
- Allow to boil the slurry about 5 min till it gets its proper consistency.
- Serve it hot.

Proximate Evaluation of the product :

Immediate analysis of the product was performed using various methods.

Evaluation of moisture content:

Moisture were analysed by standard AOAC[9]. The sample was weighed and placed in hot air oven at 100°C for 3 hour .moisture content indicates the water present in the sample.

$$\text{Moisture (\%)} = (W1 - W2) / W1 \times 100$$

Where, W1 = weight of the sample before drying

W2 = weight of the sample after drying

Determination of Fat content :

The fat content of the Beetroot soup mix was determined by the soxhlet apparatus method with petroleum ether .

Formula:

$$\text{Fat (\%)} = \text{Weight of fat /weight of sample} \times 100$$

Sensory analysis:

Sensory evaluation of any consumable product is the best method of judging the acceptability of the product by the consumer. Nine point hedonic rating test method was used for the evolution of different sample beetroot soup mix. The average rating for colour, texture, taste, flavour, of soup mix was found for sample S1 and S2 respectively. The result of this study says that the concentration of S1 was more acceptable.

RESULT AND DISCUSSION:**Proximate analysis:**

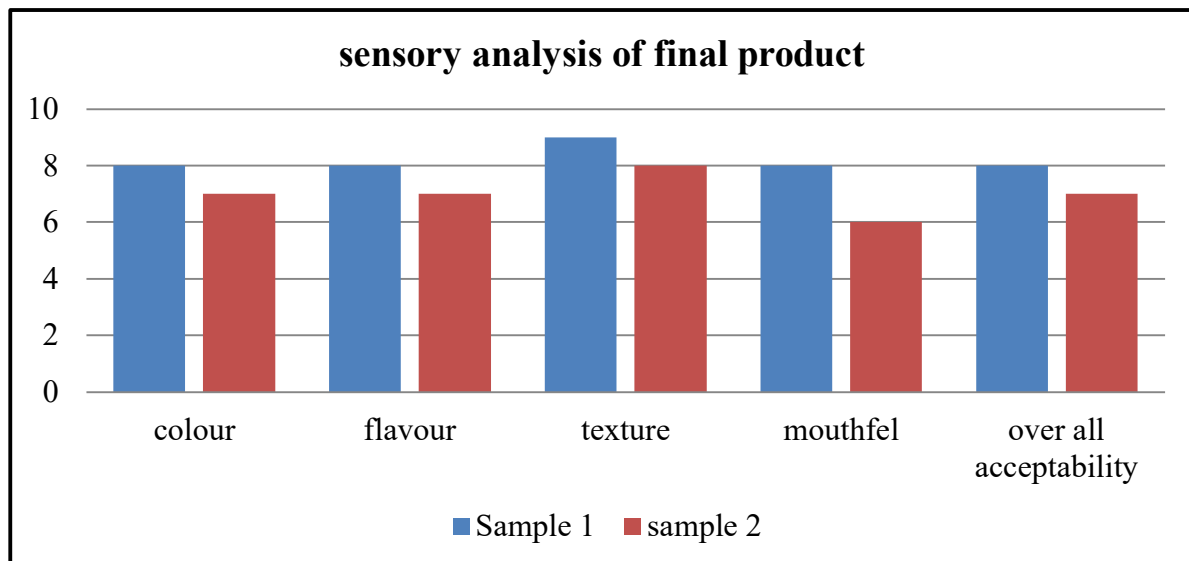
Fat content in the product is about 4.19 % and moisture content in the soup mix is about 2.4 % the minimum moisture content in the soup mix should below 10 %.

Table 1: nutritional analysis of instant beetroot soup mix

Parameters	Sample S1
Moisture	2.4%
Fat	4.19%

Sensory evaluation:

Beetroot soup mix was developed in two variations like in sample (S2), the soup mix was prepared by adding 4% of coconut milk powder in it . The sample (S2) was prepared by just addition of beetroot powder and the onion powder. The beetroot soup mix were analysed for sensory analysis. Hedonic rating: a 9 point hedonic rating scale was used to measure the acceptability of the food product. Specific faculty members and experts were asked to rate the instant soup mix of dehydrated beetroot powder.

Graph 1: Bar diagram of sensory analysis of final product**Table 2: sensory evaluation of final product**

Sample	S1	S2
Colour	8	7
Flavour	8	7
Texture	9	8
Mouthfeel	8	6
Overall acceptability	8	7

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