

# Formulation and Standardization of Garden Cress Seed Incorporated Snack Products

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## ABSTRACT

Garden Cress (*Lepidium sativum*, family – Brassicaceae) is a periodic, herbaceous comestible plant that's biologically connected to mustard and water cress. This plant grows up to 50- 60 cm. The medicinal significance of garden cress seeds to some of the countries like Arab, Albania, Serbia, Greece and India as rubifacient, emenagogue, laxative, tonic, aphrodisiac and diuretic. The seeds are as well utilized in the treatment of anaemia, diarrhoea, and bleeding piles and to elevate sexual desire. Apply garden cress seed paste to rheumatoid joints to relieve pain and swelling. It also helps with hiccups, dysentery and skin diseases caused by blood impurities. Traditional sweets for nursing mothers are made from these seeds. Foods developed by containing garden cress seeds may be beneficial as both nutritional and therapeutic agents due to the presence of various therapeutic properties such as hypoglycaemic, antihypertensive and anti-cancer. The main objective of the study is to formulate and evaluate the acceptability of the Garden Cress seed incorporated murukku and rava ladoo. Garden cress seeds serve many nutrients like Potassium and Vitamin-K. It was made into fine powder and incorporated in different products such as Murukku and Rava ladoo. Garden cress seed powder is incorporated at the level of 3%, 4%, and 5% in the both formulated products respectively. Weighed amount of rice flour and Garden cress seed powder were mixed together. In the sensory evaluation 3% sample is selected for both products by the semi trained panel members by rating them in the 5 point hedonic scale. The packaging material for the product is polyethylene and polypropylene. Nutrient analysis has been done for the major nutrients such as moisture, fat, protein, crude fibre, ash, carbohydrate. Cost has been analysed and fixed to ₹75 and ₹70. The brief summary of the result of the study carried out to formulate the garden cress seed products is dealt in this chapter the data in sensory attributes, cost analysis of the standardized product have been summarized and conclude value.

**KEY WORDS:** Garden cress seed, 3%, potassium, ₹75, ₹70, major nutrients.

## INTRODUCTION

Garden Cress (*Lepidium sativum*, family – Brassicaceae) is a periodic, herbaceous comestible factory that's biologically connected to mustard and water cress. This factory is conversational to Egypt and South west Asia. It's cultivated in India, North America and corridor of Europe. In some regions, it else's called as pepper cress, pepper wort or poor man's pepper. The plant is grown each over Asia and is well known for their ethno pharmacological properties.

This plant grows up to 50- 60 cm. The rudimentary leaves have long petioles and are lyrate pinnatipartite. The inflorescence is a thick raceme. The flowers of this plant have white or slightly pink petals, estimated up to 2 mm. The plant requires slightly chill atmosphere and gathered throughout the time with yield of minimal 6 tons per hectare. Light (flaxen), medium (loamy) and heavy (complexion) soils would be favourable for shops growth. The seeds of the factory are small, round- shaped, and edge at one end, about 4- 5 mm long, 1- 2 mm wide, sanguine brown in color. A crinkle present on both sides extended up to 2/3 over, a slight sect like extension present on both the edges of seed. The seed has a length and range of 298  $\mu\text{m}$  and 100  $\mu\text{m}$  independently. Endosperm is made up of thick walled polygonal cells and embryo as girdled by endosperm cells. The cells of embryo are small in size and polygonal in shape civilization of theater cress is practical both on mass scales and on the individual scale. The medicinal significance of garden cress seeds to some of the countries like Arab, Albania, Serbia, Greece and India as rubifacient, emenagogue, laxative, tonic, aphrodisiac and diuretic. The seeds are aswell utilized in the treatment of anaemia, diarrhoea, bleeding piles and to elevate sexual desire. Garden cress has been considered as an important nutritional and medicinal plant in India since the Vedic era (between 500-1700 B.C.). In Ayurveda, it is described as hot, bitter, Galactogogue and claimed to destroy Vata (air) and Kapha (phlegm). Garden cress seeds are habitually used in South Asia to treat bronchitis, asthma, and cough. It is observed as a diuretic, expectorant, aphrodisiac, gastrointestinal stimulant, gastro protectant, analgesic, and Stomadic. Apply garden cress seed paste to rheumatoid joints to relieve pain and swelling. It also helps with hiccups, dysentery and skin diseases caused by blood impurities. Traditional sweets for nursing mothers are made from these seeds. Foods developed by containing garden cress seeds may be beneficial as both nutritional and therapeutic agents due to the presence of various therapeutic properties such as hypoglycaemic, antihypertensive, hernia healing and anti-cancer.

## OBJECTIVES

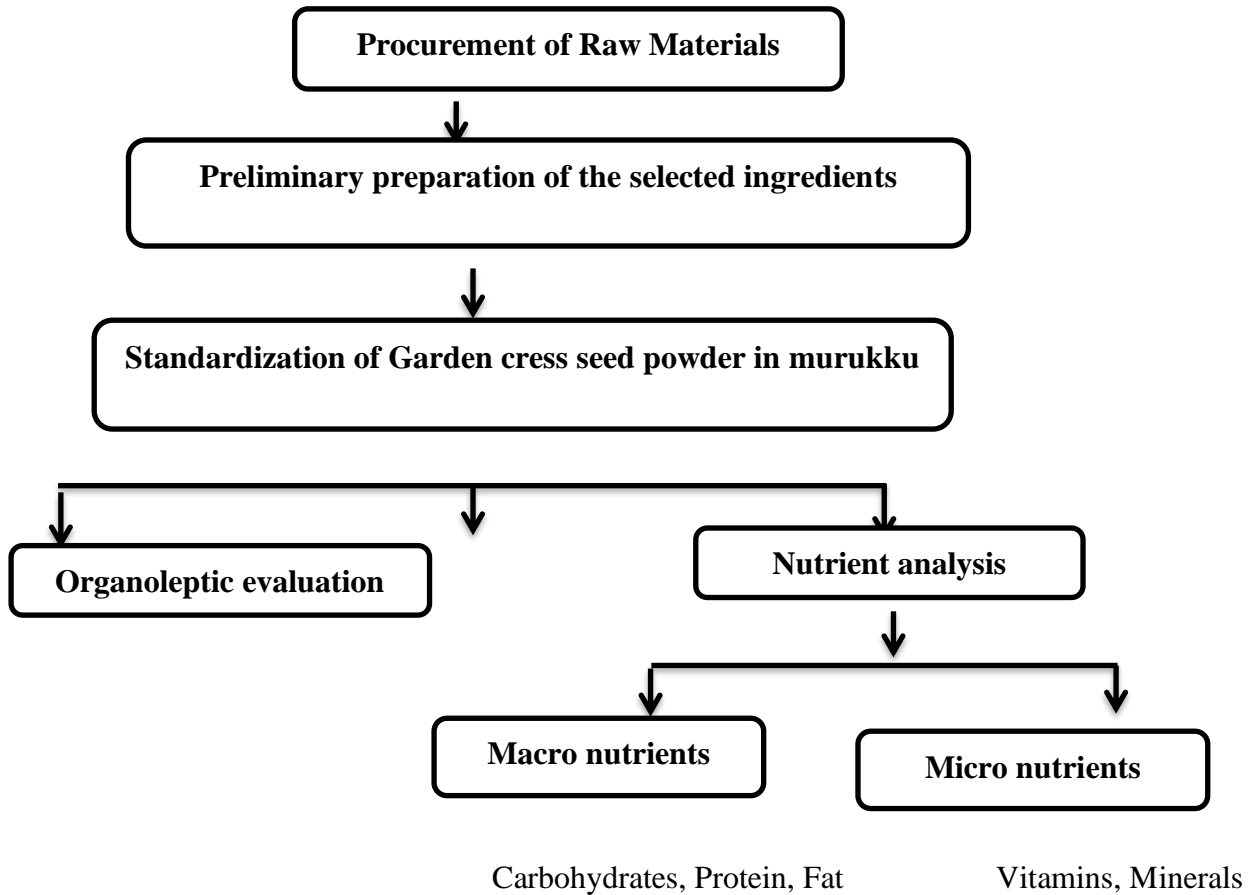
- To formulate a Garden Cress seed incorporated in murukku.
- To evaluate the acceptability of Garden Cress seed murukku by sensory evaluation.
- To estimate the nutrient content of the developed Garden Cress seed incorporated murukku by Standard methods

## METHODS

The design adopted for the “Standardization of Garden cress seed powder incorporated in murukku” are shown in Figure 1.

**Figure 1**

Flow chart for the Standardization of Garden cress seed powder murukku.



**Preliminary preparation of selected Ingredients**

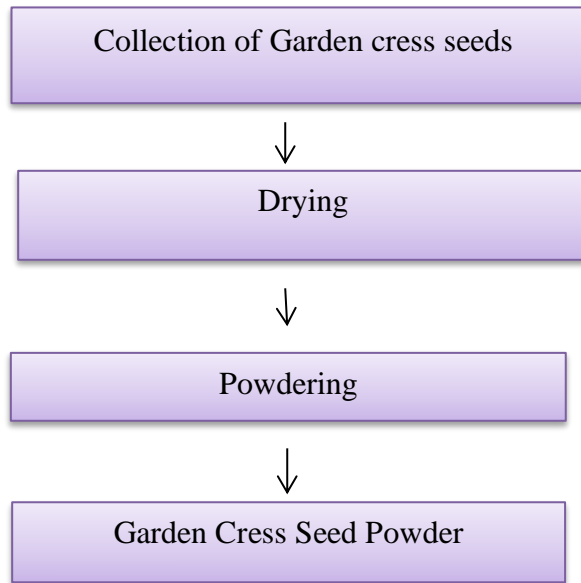
The Garden cress seeds are dried under sun then it is grounded to fine powder. The prepared powder was used to make various value added products such as murukku.



**Standardization Garden cress seed powder murukku**

Garden cress seeds serve many nutrients like Potassium and Vitamin-K . It was made into fine powder and incorporated in different products such as Murukku. Garden cress seed powder is incorporated at the level of 3%, 4%, 5% in the formulated product respectively. Garden cress seeds and its powder are shown in Plate 1. Standardization procedure was followed for all the formulated recipes by

**FIGURE 2: PREPARATION OF GARDEN CRESS SEED POWDER**



**DEVELOPMENT OF GARDEN CRESS SEED POWDER INCORPORATED MURUKKU :**

The proportion of ingredients used in the preparation of control and Garden cress seed powder Incorporated Murukku is given in table 3.

Table 3: Proportion of ingredients used in the procedure of developing garden cress seed powder Murukku :

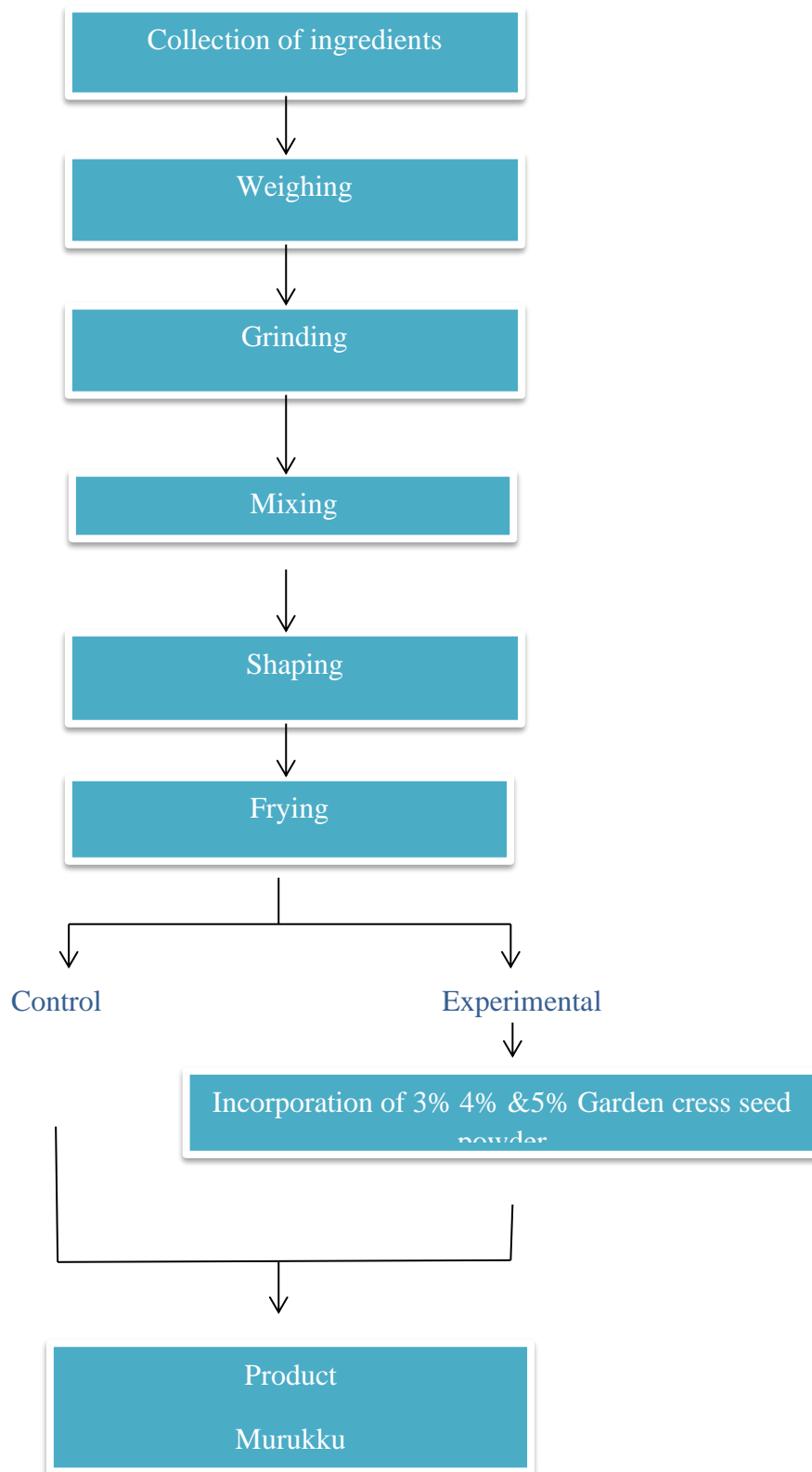
S.No	Ingredients	Quantity(g)			
		Control	GCM 1	GCM 2	GCM 3
1.	Rice flour	100	85	86	87
2.	Garden cress seed powder	-	5	4	3
3.	Butter	25	10	10	10

GCM 1 – 5 -Garden cress seed powder Incorporated Murukku  
 GCM 2 – 4- Garden cress seed powder Incorporated Murukku  
 GCM 3 – 3- Garden cress seed powder Incorporated Murukku

**Procedure**

Weighed amount of rice flour and Garden cress seed powder were mixed together. After mixing weighted butter and salt is added. Mix the ingredients until it becomes a wet dough. Heat the oil and the dough is transferred to the murukku press maker. Give it a shape and deep fry the dough.

**FIGURE 3: PREPARATION OF GARDEN CRESS SEED POWDER MURUKKU**



**Development of Garden cress seed powder incorporated Rava laddoo:**

The proportion of ingredients used in the preparation of control and Garden cress seed powder incorporated Rava laddoo is given in table 3.

Table 3: Proportion of ingredients used in the development of Rava laddoo :

S.N O	INGREDIENTS	QUANTITY(G)			
		CONTROL	GCR 1	GCR 2	GCR 3
1.	Rava	100	85	86	87
2.	Garden cress seed powder	-	5	4	3
3.	Sugar	75	10	10	10

GCM 1 – 5 -Garden cress seed powder Incorporated Rava laddoo

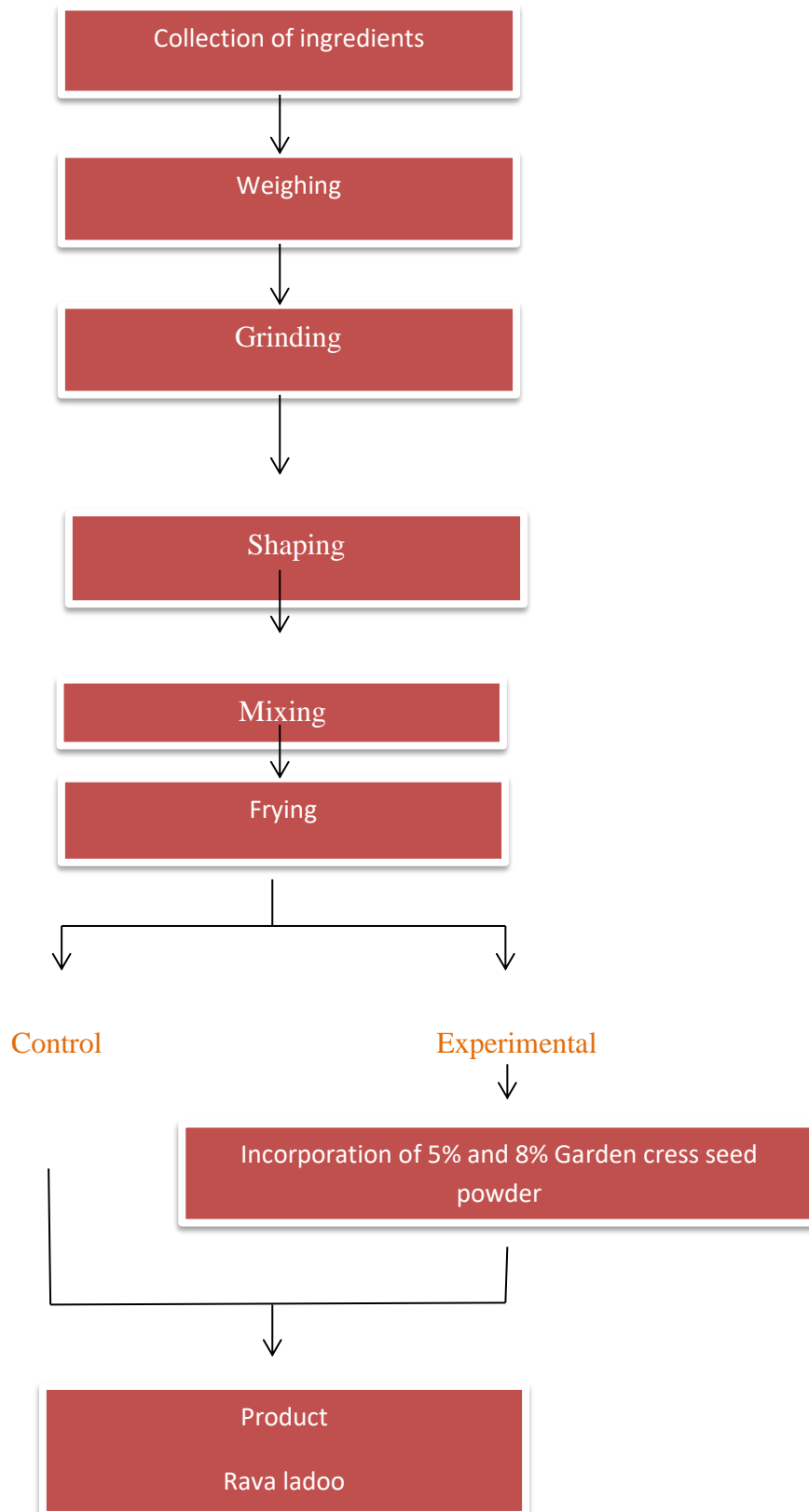
GCM 2 – 4- Garden cress seed powder Incorporated Rava laddoo

GCM 3 – 3- Garden cress seed powder Incorporated Rava laddoo

**Procedure**

Weighed amount of rava and garden cress seed powder were mixed together. Powder the garden cress seeds to a fine powder and rava, sugar to a granular powder form. Fry the cashew nuts and raisins in ghee. Heat the ghee in a pan and add all ingredients and make them to a ball like structure

**FIGURE 4: PREPARATION OF GARDEN CRESS SEED POWDER RAVA LADOO**



### ORGANOLEPTIC OR SENSORY EVALUATION

The institute of Food Technologies (IFT) defines sensory evaluation as, “The scientific discipline used to evoke, measure, analyses, and interpret those reactions to characteristics of food and materials as perceived through the senses of light, smell, taste, touch and hearing (Murano and Sivalingam, 2005). When the quality of a food product is assessed by means of human sensory organs, the evaluation is said to be sensory or subjected or organoleptic evaluation. Sensory quality is a combination of different senses of perception coming in choosing and eating a food. Appearance, flavour and mouth feel decides the acceptance of the food (Sreeja et al., 2009).

Garden Cress Seed Powder incorporated food products viz., Murukku was prepared by incorporating Garden cress seed powder at the level of 3%, 4% and 5% respectively. It was evaluated by a panel of judges using score card with five point hedonic scale rating. The score card for the Murukku ,score card was given below.

NAME:

PRODUCT NAME:

DATE:

#### INSTRUCTIONS

**NOTE :** Take the given samples, and then give the marks accordingly

S.NO	SENSORY ATTRIBUTES	SAMPLE A	SAMPLE B	SAMPLE C	SAMPLE D
1.	APPEARANCE				
2.	COLOR				
3.	FLAVOUR				
4.	TEXTURE				
5.	TASTE				

5-Likes extremely

4-Likes moderately

3-neither like or dislike

2-dislike moderately

1-dislike extremely



**COST ANALYSIS**

The cost of Garden cress seed powder incorporated murukku was taken into account of fixed and variable cost include during the course of processing and production

S NO	INGREDIENTS	QUANTITY (g)	COST(Rs)
1	Garden cress seeds	4g	11.75
2	Rice flour	86g	43
3	Salt	3g	0.18
4	Butter	5g	2.75
5	Oil	2g	1.75

Total = 59.43

Electricity & other working charges = ₹ 5.57

**COST = ₹ 65**

**PROFIT = ₹15**

**TOTAL COST = ₹75**

The cost of Garden cress seed powder incorporated Rava laddoo was analyzed by taking into account of fixed variable cost including the course of processing and production.

S NO	INGREDIENTS	QUANTITY (g)	COST(Rs)
1.	Garden cress seed	3g	7.05
2.	Rava	57g	31.35
3.	Ghee	5g	0.5
4.	Sugar	35g	10.5

Total = ₹49.04

Electricity & other work charges = ₹10.96

**COST = ₹60**

**PROFIT =10**

**TOTAL COST = ₹70**

**RESULTS AND DISCUSSION**

The data collected from the present investigation entitled “Formulation and Standardization of Garden cress seed powder incorporated Murukku and Rava laddoo” was consolidated, statically analyzed and presented under the following headings.

4.1 Acceptability of control B and 3% garden cress seed power incorporated snack products viz., Murukku & Rava laddoo

4.2 Nutrient analysis of control B and 3% garden cress seed powder incorporated snack products viz., Murukku & Rava laddoo.

**4.1 Acceptability of control and Garden Cress Seed Powder Incorporated Snack Products.**

The developed food products namely Murukku & Rava laddoo were prepared by incorporated by garden cress seed powder at level of 3,4 and 5% respectively. The result of the acceptability trial is discussed below.

**4.1.1 Acceptability of control and Garden Cress Seed Powder Incorporated Snack Products**

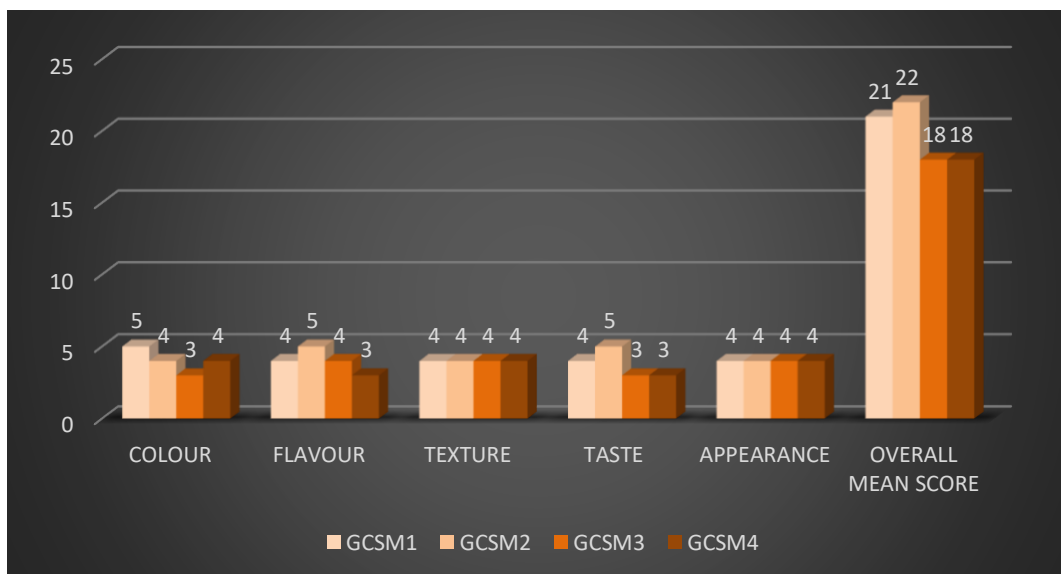
Murukku was prepared by incorporating garden cress seed powder at the level of 3, 4 and 5% respectively and the acceptability for each sensory attributes in discussed in table Acceptability of GCSM – formulated murukku and its variation 1, 2, 3 and 4.

It’s variation for each sensory attributes is discussed in table mean scores are obtained for the overall acceptability of murukku.

**Table 4 :**

- 5 – like extremely
- 4 – like moderately
- 3 –neither like or dislike
- 2 –dislike moderately
- 1 –dislike extremely

Among the developed product, the overall mean score in GCSM 2 was highly acceptable. The results revealed that GCSM 2 secured highest score and the sensory attributes which was more or is equal to other developed products



**Figure 5**

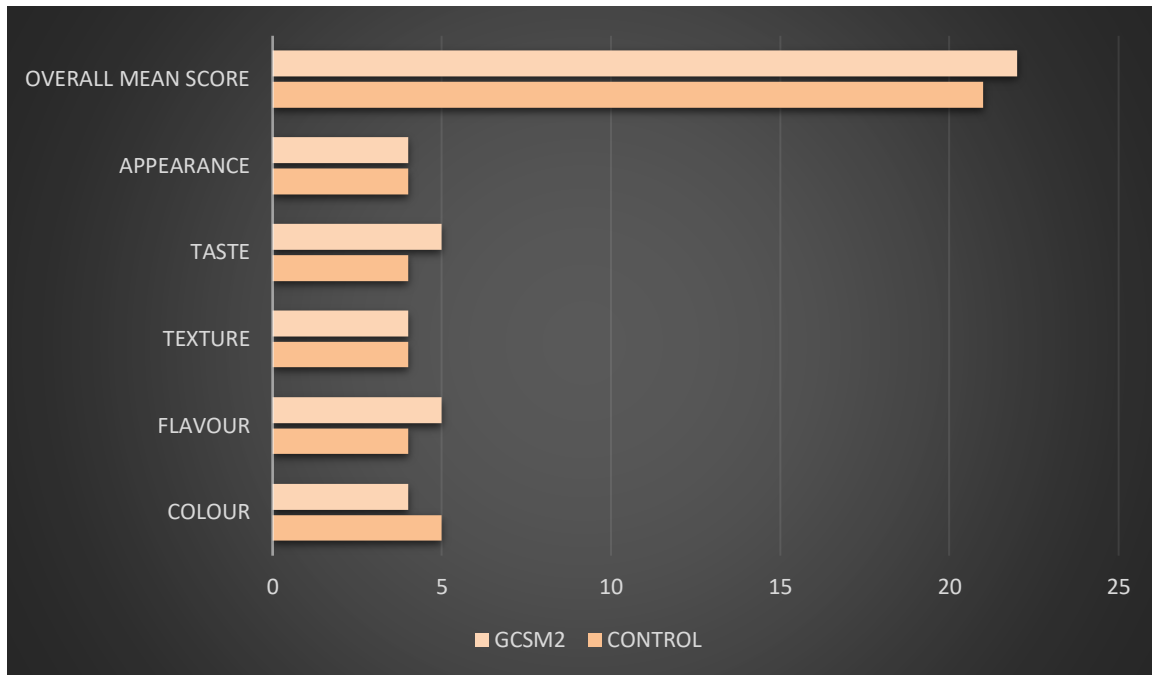


Figure 6

#### 4.1.2 ACCEPTABILITY OF THE FORMULATED GARDEN CRESS SEED POWDER INCORPORATED RAVA LADOO AND IT’S VARIATION

The formulated garden cress seed powder incorporated rava laddoo and its variation were prepared the results of the acceptability trail is discussed below.

Acceptability of GCSR – formulated rava laddoo and its variation 1,2,3 and 4.

Its variation for each sensory attributes is discussed in table means scores are obtained for the overall acceptability of rava laddoo.

Table 5: Score card of GCSR

S.NO	SENSORY ATTRIBUTES	SAMPLE A (GCSR1)	SAMPLE B (GCSR2)	SAMPLE C (GCSR3)	SAMPLE D (GCSR3)
1.	APPEARANCE	4	4	4	3
2.	COLOR	5	5	3	3
3.	FLAVOUR	4	5	3	3
4.	TEXTURE	4	4	4	4
5.	TASTE	5	5	3	3

Note

- 5 – like extremely
- 4 – like moderately
- 3 –neither like nor dislike
- 2 –dislike moderately
- 1 –dislike extremely

Among the developed product, the overall mean score in GCSR2 was highly acceptable. The results revealed that GCSR2 secured highest score and the sensory attributes which was more or is equal to other formulated products.

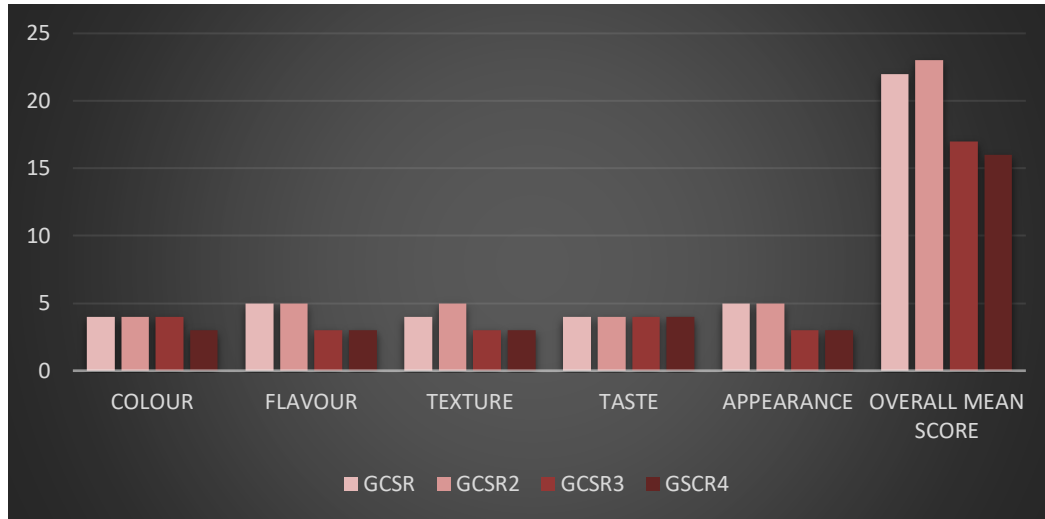
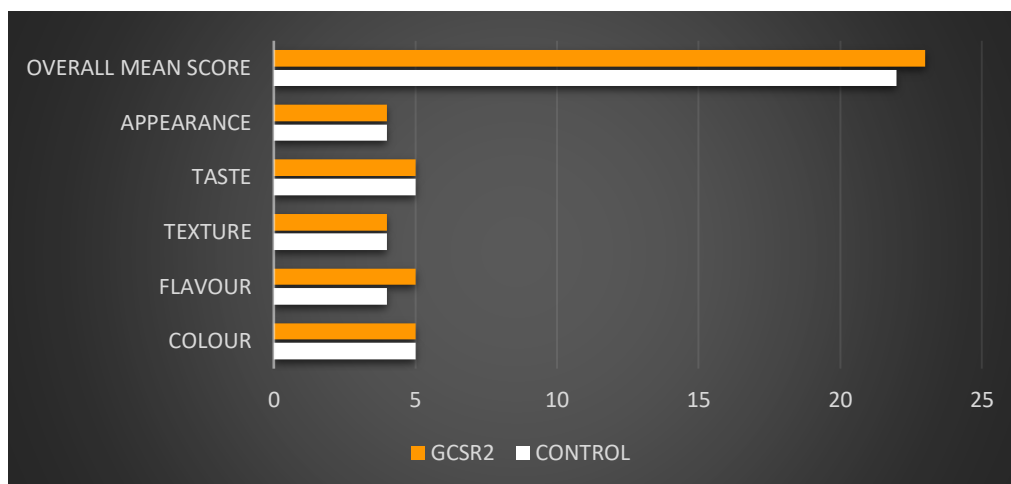


Figure 7



#### 4.2 NUTRIENT ANALYSIS OF GARDEN CRESS SEED POWDER INCORPORATED SNACK PRODUCTS

The nutrient content of 3% Garden cress seed powder incorporated murukku is given in table 6

S.no	Nutrients	GCSM2
1	Moisture	1.06%
2	Crude protein	3.60%
3	Fat	19.08%
4	Crude fiber	2.9%
5	Total ash	1.8%
6	Acid insoluble ash	0.09%
7	Carbohydrate	73.36%
8	Energy	479.6 Kcal

## NUTRIENT CONTENT OF GCSM2

The nutrient content of 3% Garden cress seed powder incorporated rava laddoo is given in table 7

S.no	Nutrients	GCSR2
1	Moisture	7.11%
2	Crude protein	5.3%
3	Fat	9.5%
4	Crude fiber	0.2%
5	Total ash	1.8%
6	Acid insoluble ash	0.1%
7	Carbohydrate	44.6%
8	Energy	479kcal

\*estimated value

## NUTRIENT CONTENT OF GCSR2

### RECOMMEDATION

To find many more value added products from the by-products of garden cress seed.

### SUMMARY AND CONCLUSION

The brief summary of the result of the study carried out to formulate the garden cress seeds murukku is dealt in this chapter the data in sensory attributes, cost analysis of the standardized product have been summarized and conclude value.

1. Acceptability of the developed Garden cress seed murukku and its variations.
2. Cost analysis of the standardized Garden cress seed incorporated murukku

### Acceptability of control and its variations 3%,4% and 5% Garden cress seed powder incorporated snack products

The acceptability level of control and its variations 3%,4% and 5% garden cress seed powder incorporated snack products were evaluated by colour, texture, taste, flavour, appearance.

- The 3% garden cress seed powder incorporated murukku was highly acceptable among other variations.
- The 3% garden cress seed powder incorporated rava laddoo was highly acceptable among other variations.

### 5.2 Nutrient analysis of control and its variations 3%, 4% and 5% garden cress seed powder incorporated snack products.

The major nutrients like carbohydrates, protein, fat etc. were analyzed in 3% garden cress seed powder incorporated murukku and 3% garden cress seed powder incorporated rava laddoo.

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