

# Development and Sensory Quality of Rice Base Candy Supplemented with Mushroom and Walnut Flour

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**Abstract:-** An attempt was made to create a rice-based candy that also contained dry mushroom and walnut powder in order to create a Nutri play candy for the teenage population that is unable to obtain the necessary nutrition value from their food on a regular basis. Only sugar syrup was added during the manufacture of the other candies. On the basis of the sensory characteristics of the sample (measured on a 9-point hedonic scale), the process parameters of sugar concentration, temperature, heating time, and texture were examined. The ideal solid candy needs to be processed at 115 °C for 7 minutes at 9% rice powder content. Similarly, after carrying out the same experiment with rice-based candy, it was discovered that utilizing 40% raw sugar, processing at 115 degrees Celsius for 7 minutes, was the optimal combination for its manufacture. Investigations were also conducted into the sensory aspects of the final product and the three factors (*Jain et al., 2000*). Analysis was done on the samples' changes in sugar content and nutritional value as a function of temperature, heating duration, and sugar concentration. Candy was accepted or liked on the basis of sensory evaluation as it was rated between 7-9. The candy's nutritional value increases by adding mushroom and walnut flour. As it fulfill the basic protein and energy requirement as well as PUFA and MUFA of teenage group. Candy is the acceptable form which is easily consumed or accepted by teenage. Confection made of rice was determined to conform with FSSAI standards.

## I. INTRODUCTION

Candy has its origins mainly in ancient India. Candy also called a sweet or lollies is a confection contain sugar or honey as a principal ingredient. Candy is a type of sweet confectionery, typically prepared by dissolving sugar in water or milk and boiling it to concentrate the sugar. Before industrial revolution, candy was often considered a form of medicine, either used to calm the digestive system or cool a sore throat. The English word candy become to be used in the late 13th century. The first candy came to America in the early 18<sup>th</sup> century from Britain and France.

Starch is the primary source of stored energy in many plants including cereals, legumes, roots and tubers. It provides 70%–80% of the calories consumed by humans worldwide. In addition to their nutritive value, starches are widely used as ingredients in many foods to impart textural and overall acceptability. They are used as gelling, thickening, adhesion, moisture-retention, stabilizing, film forming, texturizing and anti-staling ingredients. In gluten-free products, starch is incorporated into the food formulation to improve one or more of these properties. This is dependent on the interaction with other ingredients in the formulation and the type of food product. Starch is obtained from a variety of plant sources. Starch serves many purposes in a candy, a major use being a gelling agent in jellies and hard gums.

Mushrooms are richer than most food sources except meat in term of protein content. In addition to having high nutritional attributes mushrooms are low cholesterol content. Given their protein and micronutrients content as well as health-giving properties, mushrooms can highly contribute to handle protein malnutrition and micronutrients deficiency in developing and underdeveloped countries as a novel food fortification approach. Edible mushrooms are an excellent source of proteins, minerals, polysaccharides, unsaturated fatty acids, and secondary metabolites. Numerous studies have provided for the protective effects of edible mushrooms against various chronic disease. The most popular vegetarian food, and one that is particularly high in protein, is the mushroom. Mushrooms have been correctly identified as a food source to combat hunger in underdeveloped nations because of their flavor, texture, nutritional content, extremely high productivity per unit area and time, minimal dependence on land, and capacity to grow on a range of leftover agricultural wastes. Mushrooms are high in protein, carbohydrates, and dietary fiber yet low in energy and fat. Numerous vitamins, minerals, and trace elements, including riboflavin, niacin, and folates, are found in mushrooms.

Walnuts are abundant in polyunsaturated fat, protein, fibre, manganese, copper, melatonin, ellagic acid, and omega-3 fatty acids, which have been associated with a

reduced risk of heart disease and inflammation. Because they contain polyunsaturated fatty acids, walnuts are heart healthy. Melatonin and other antioxidants are abundant in walnuts. Walnut contains important vitamin structures such as: riboflavin, niacin, thiamine, pantothenic acid, vitamin B6, and folate/B9 . As walnut has a preventive effects of inflammation, it decreases the risk of high blood pressure; it also prevents arterial illnesses that can result with: heart, and brain stroke, chest diseases, colon and prostate cancer Walnuts are super healthy nuts that come with excellent health benefits. Hence most parents are keen to include walnuts for kids in chopped, finely ground, or other forms. They are great sources of healthy fats, fiber, and other essential nutrients and are also known to help manage a child’s blood pressure and digestion. A type of super-food, walnuts offer children an energy boost. While cane sugar is the most generally used type of sugar, candies are a commonly created confectionery product made from a combination of jaggery, water, and other types of sugar .The

typical sweetening ingredient used in the creation of sweets is white sugar. Such sugar has a sucrose content of 99.7%. Considerable interest is being shown in investigating the potential for substituting sugar with other natural and artificial sweeteners in light of the drawbacks associated with excessive sugar consumption. It is a dense, sweet, hard candy. As a product, it is quite important and extensively consumed in several Indian states.

Walnut-based candy will be a good source of protein, vitamins, and minerals, just like regular candy. Additionally, it contains a sizable amount of omega 3. The process of boiling the mixture in a pan until it reaches its striking point results in rice-based candy. It is a soft, sweet, and nutritious candy that offers a number of health advantages when consumed regularly. It is said to help in the growth of brain development for children and teenager. Numerous studies have provided for the protective effects of edible mushrooms against various chronic disease

**II. MATERIALS AND METHODS**

➤ *Materials*

Mushroom powder, walnut powder, white sugar, flavoring agent, rice powder, butter was used in half round vessel and ladle. Thermometer require to measure the heating temperature.

➤ *Preparation of Mushroom Powder*

Firstly, take the mushroom and wash them thoroughly, then cut out the stem part and chop them in small pieces to get dry quickly. Later it was kept in the sunlight and spreaded on muslin cloth to dry. This might take 2-3 days to complete.

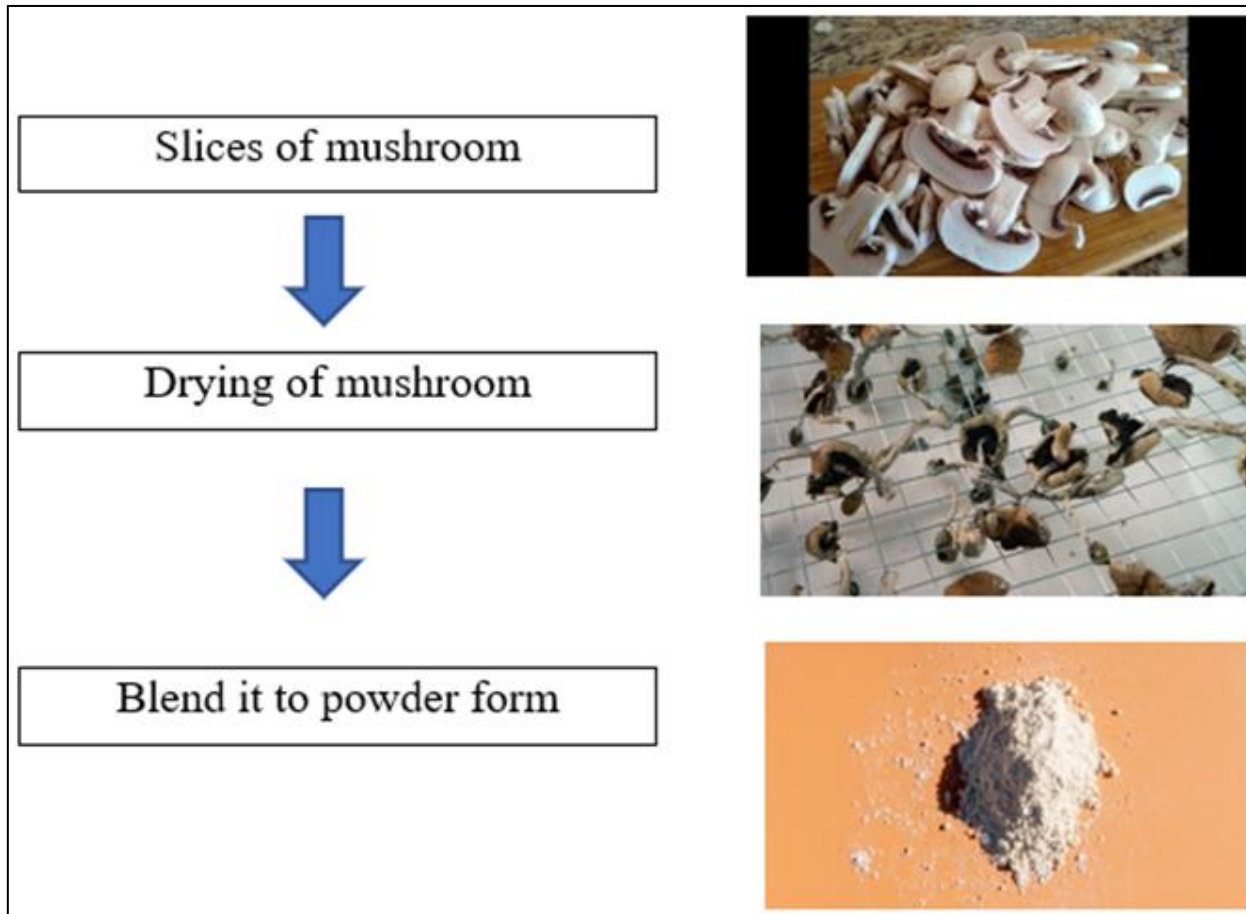


Fig 1 Flowchart of Preparation of Mushroom Powder

➤ *Preparation of Walnut Powder*

Walnuts are naturally dry and oily; thus, care should be used when crushing them. Remove the walnut from its shell, then take the grinding machine's jar, give it a thorough cleaning, and make sure it's completely dry. After that, pound the walnut in the jar for about 30 seconds, making sure to dry it out so that no oil is released.

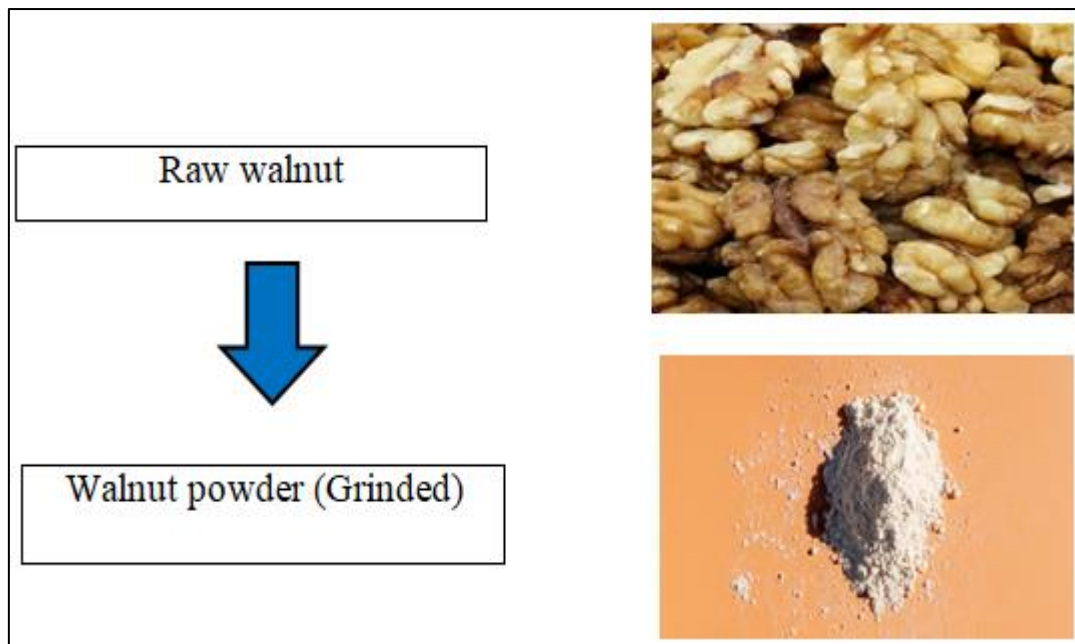


Fig 2 Flowchart of Preparation of Walnut Powder

➤ *Preparation of Rice Powder*

After washing the white rice, soak it for six hours. After the rice has been soaked, drain the water from it, spread it out evenly on a cotton cloth, and allow it to dry entirely (this will take 2-3 days). Then, take the dried rice and grind it in a grinder.

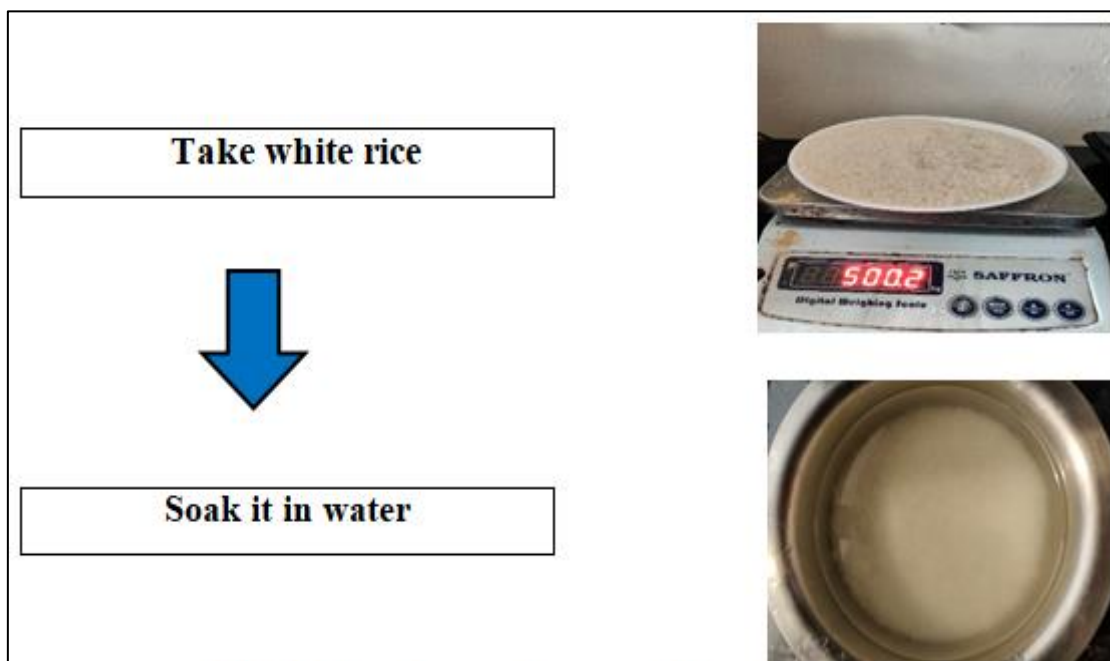


Fig 3 Flowchart of Preparation of Rice Powder

➤ *Preparation of Candy*

Different combinations of mixture (concentration in%), processing temperature, and heating time were used to make a variety of candy samples. Then, in order to optimize these process parameters, a thorough sensory, colour, and texture analysis was done. After obtaining an ideal sample, the experiment is conducted with identical results. In a half-round container, there was a mixture of rice powder, mushroom powder, and walnut powder.

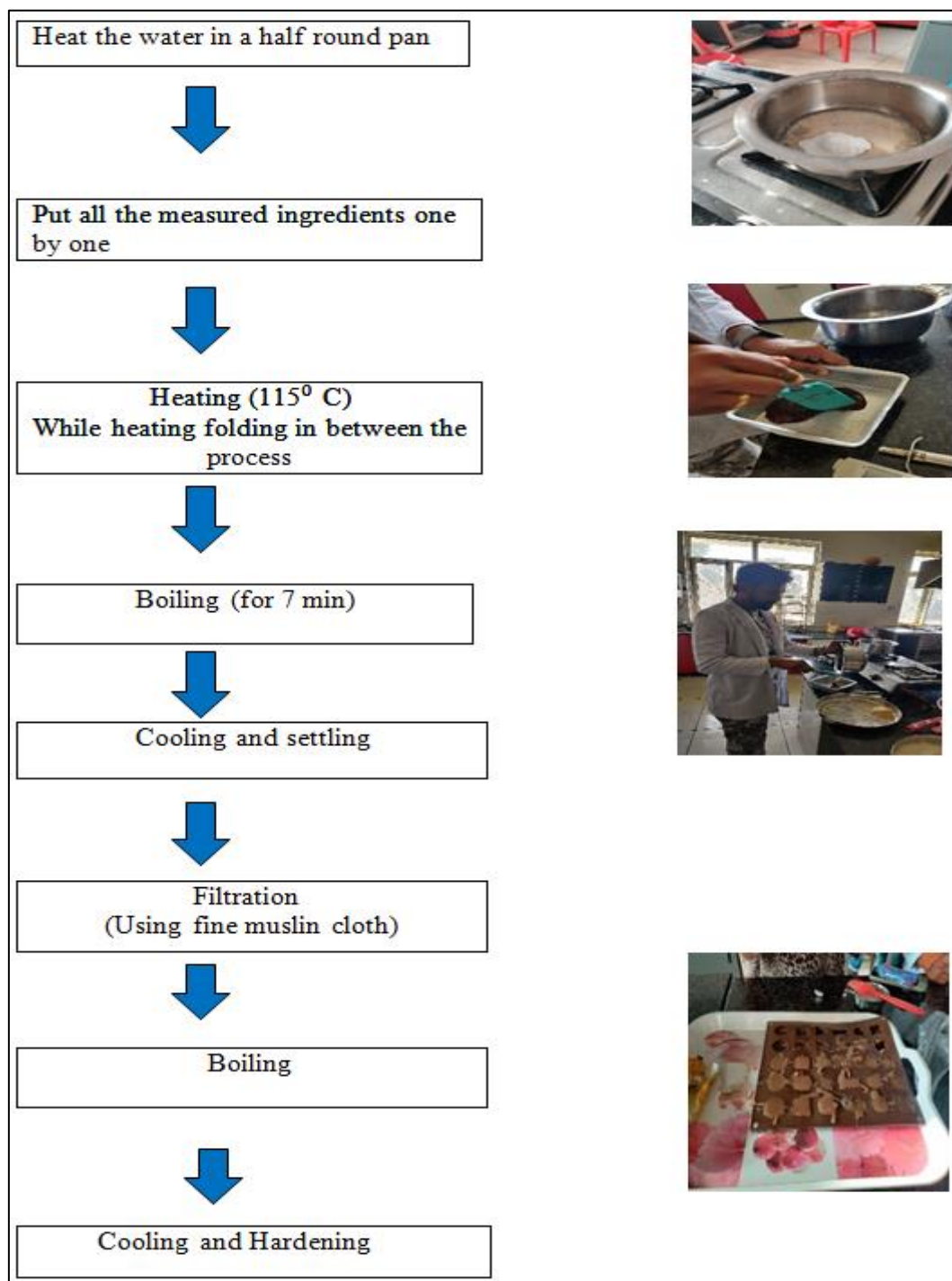


Fig 4 Flowchart of Preparation of Rice Candy

The samples were heated till temperature reached 115°C. Seven samples were prepared by boiling at temperature reached 100°-115°C. The sensory evaluation was carried out on candy using a hedonic 9-point scale.

➤ *Sensory Evaluation*

The sensory evaluation in respect of colour/appearance, flavor/ taste, aroma, texture, acceptability were evaluated by the judges using nine-point hedonic scales(fig.3) and the result was calculated as average. The hedonic scale with nine points was used to evaluate sensory input. Each sample was coded with a unique number, with

the sample name T denoting candy and the numeric value representing the various samples' subscripts. The evaluation was performed by the five panelists. On the basis of sensory factors such look, scent, flavour, and general acceptability, they were asked to rate the samples. They received water to wash their palates and rinse their mouths. According to Upadhya A, Bhalerao P, Bhushette, Dabade A, and Sonawane K S, a product was given a score between 1 and 9, with 1 denoting extreme hate and 9 denoting great liking.

- Sensory evation form for Nutri play candy
- Name:



Table 1 Nine-point hedonic scales for sensory evaluation

Score	Rating Scale	Appearance/Color	Taste/Flavor	Smell/odor	Texture/Consistency
9	Like extremely				
8	Like very much				
7	Like moderately				
6	Like slightly				
5	Neither like or dislike				
4	Dislike slightly				
3	Dislike moderately				
2	Dislike very much				
1	Dislike extremely				

Feedback:

Date: \_\_\_\_\_ Signature: \_\_\_\_\_

### III. RESULT AND DISCUSSION

➤ *Sensory Evaluation*

The sensory evaluation was done using Nine-point hedonic scales of 6 samples from T<sub>1</sub> to T<sub>6</sub>. Different samples was tasted and judged by the panelist member. Result shows (Table 2) that the sample T<sub>6</sub> was best among all the samples where as aroma , ,appearance ,texture , overall acceptability of the of sample T<sub>6</sub> was highest where as the flavour of sample T<sub>5</sub> was highest. Different ranking of every samples was explained in below table

Table 2 Mean Sensory Score of Different Variations of Rice base Candy

Samples	Appearance		Aroma		Flavour		Texture		Overall Acceptability	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	mean	Standard Deviation	Mean	Standard Deviation
T <sub>1</sub>	7.16±0.8122		8.2±0.842		8.5±0.756		3±0.687		6.75±0.630	
T <sub>2</sub>	5.8±0.7688		8.5±0.863		8.6±0.884		5.5±7.3		6.88±0.80	
T <sub>3</sub>	6.4±0.796		6.2±0.772		8.1±0.834		6.6±8.8		6.5±0.799	
T <sub>4</sub>	7.5±0.8313		8.1±0.8145		9.2±0.897		6.25±7.85		7.63±0.82	
T <sub>5</sub>	8.4±0.896		8.13±0.8134		9.25±0.902		7.1±0.63		8±0.781	
T <sub>6</sub>	8.9±0.887		9.1±0.905		8.5±0.835		9±8.75		8.7±0.675	

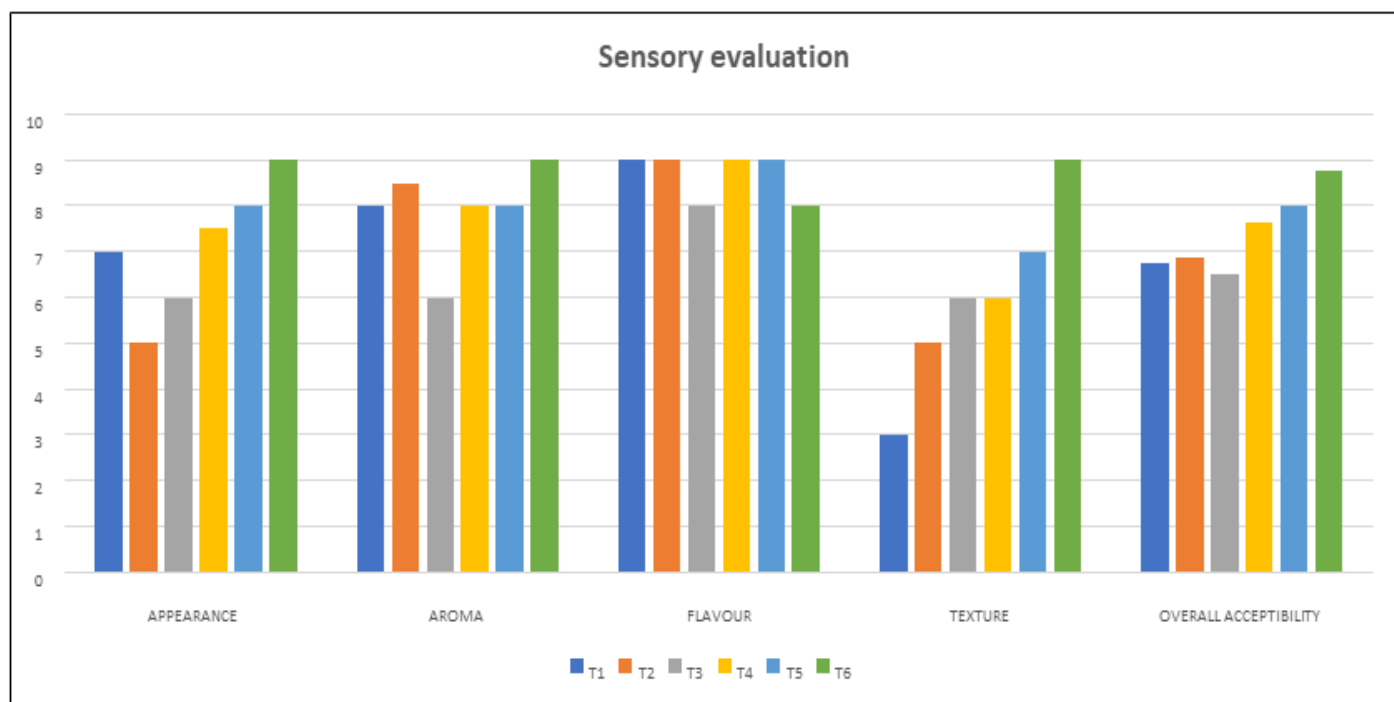


Fig 5 Graphical Representation of Sensory Evaluation

#### IV. CONCLUSION

The results of this study indicate that individuals nowadays require a lot of daily nutrients, and the general acceptance of or like by people indicates that they find the idea and process of creating candy to be appealing. Some people dislike sweetness because they prefer a tangier flavor in their sweets, but overall acceptability demonstrates that the product will satisfy consumers' nutritional demands, which are universally sought for. Walnuts are the major component used for nutritional fulfilment and are well-suited to the recipe. It is prepared to serve as daily sweets for those who are in need and others who enjoy candies.

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