



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; 11(8): 2025-2028  
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[www.thepharmajournal.com](http://www.thepharmajournal.com)

Received: 08-06-2022  
Accepted: 19-07-2022

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## Preparation and quality assessment of candy by blending orange juice, carrot juice and basil powder

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### Abstract

The present investigation studies was conducted for development of candy with different proportions of orange juice, carrot juice and basil powder, for control T<sub>0</sub> candy was standardized 100% orange juice, and T<sub>1</sub> was 80% orange juice, 19% carrot juice and 1% basil powder, 5% agar-agar and 25% sugar and treatment T<sub>2</sub> was 70% orange juice, 29% carrot juice, 1% basil powder, 5% agar-agar and 25% sugar, and treatment T<sub>3</sub> was 60% orange juice, 39% carrot juice, 1% basil powder, 5% agar-agar and 25% sugar. Whereas the concentration of agar-agar 5% and 25% sugar was kept constant throughout the treatments. The physicochemical analysis was done for prepared candy such as protein content, ash content, moisture content, acidity content, by FSSAI manual and antioxidant activity, vitamin-C, vitamin-A. Further evaluate the sensory characteristics of candy. Based on the physicochemical analysis and sensory evaluation sample T<sub>3</sub> which contain 60% orange juice. 39.5% carrot juice, 0.5% basil powder was found higher acceptability. Microbiological analysis were carried out to assess the self-life of candy, so it as observed that no growth of coliform in candy.

**Keywords:** Orange juice, carrot juice, basil powder, candy, protein content, antioxidant activity, vitamin-a, vitamin-c

### Introduction

One of the finest ways to raise the juice's nutritious value is to combine it. Depending on the type and quality of fruits and vegetables used, it might enhance the vitamin and mineral content.

### Orange

Orange is a great source of beneficial nutrients such as minerals, vitamins, flavonoids and nutrients. All these nutrients play a significant role in maintaining healthy body. Consumption of vitamin C is essential to protect the body cells from free radicals. A satisfactory amount of crucial vitamins can be provided to the body by taking orange juice. The presence of manganese, potassium, iron, chlorine, zinc, folic acid, sodium, phosphorous and pectin makes it more valuable. And most importantly the calories in orange juice are zero. Orange juice is actually the liquid extract of the fruit of orange. Orange juice is also formed when the juice is concentrated and water is added to the concentrate. There are many benefits of orange juice and one of its major benefits is the high concentrations of vitamin C and sufficient amount of folacin, calcium, potassium, thiamine, niacin and magnesium (Angew, 2007) [1].

### Carrot

Carrots are a root vegetable rich in carotenoids, flavonoids, vitamins, and minerals, all of which have various nutritional and health advantages. Carotenoids, polyphenols, and vitamins found in carrots work as antioxidants, anticarcinogens, and immunoenhancers in addition to supporting the old wives' tale that carrots are excellent for the eyes. Hepatoprotective, renoprotective, cholesterol and cardiovascular disease reducing, and wound healing. Carrots are said to offer advantages as well. Additionally, carrot seed extracts have notable hepatoprotective, antibacterial, antifungal, anti-inflammatory, and analgesic properties.

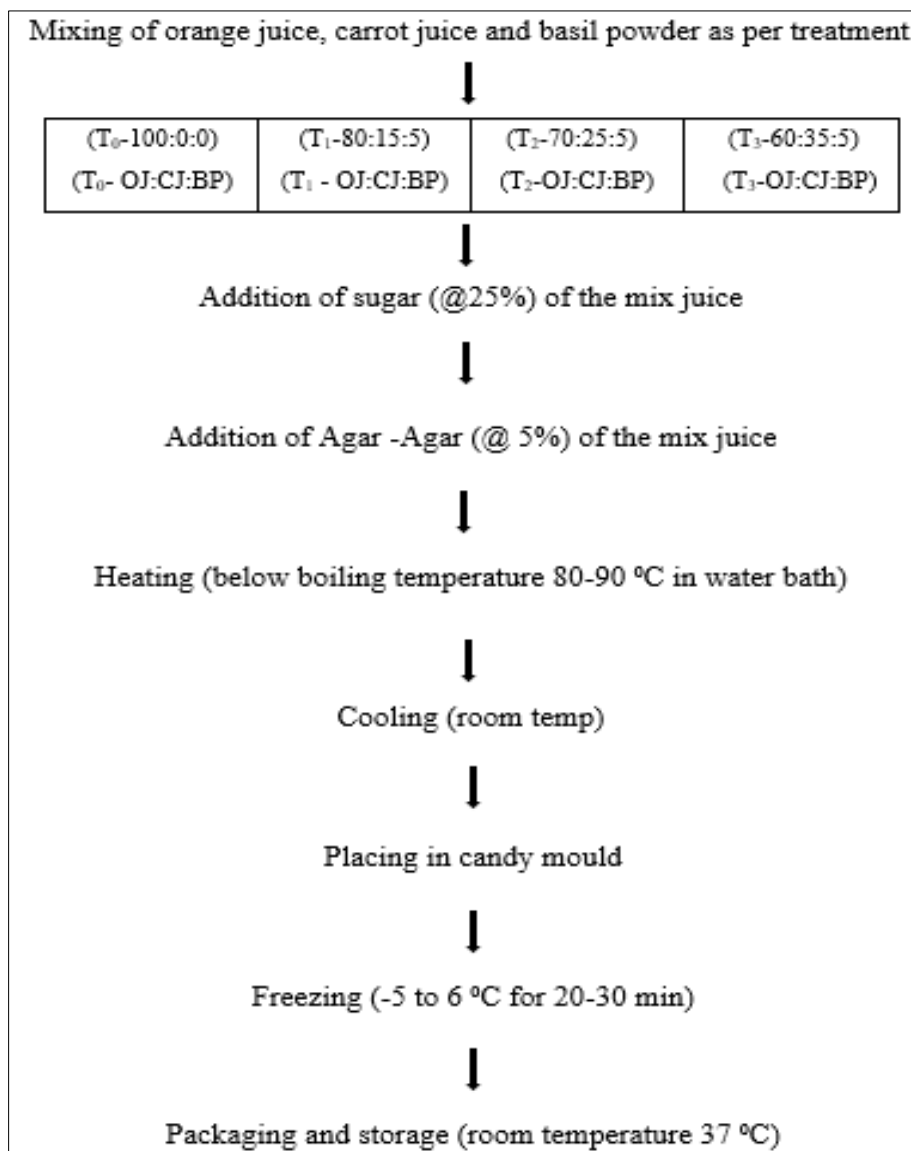
### Basil

Tulsi, commonly known as basil leaves, or *Ocimum sanctum*, has been linked to health benefits such preventing cough and respiratory issues. Additionally anti-inflammatory, antioxidant, and anti-depressant properties are found in basil leaves.

**Material and Methods**

**Table 1:** Treatment table (ratio)

Treatment	Orange juice	Carrot juice	Basil powder	Agar-agar	Sugar
T0	100	0	0	5%	25%
T1	80	15	1	5%	25%
T2	70	25	1	5%	25%
T3	60	35	1	5%	25%



**Fig 1:** Orange juice and carrot juice and basil powder. (Candy)

**Result and Discussion**

**Table 2:** The different parameters of control and experimental samples of candy which has been found are discussed below

Parameter	T <sub>0</sub>	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
<b>Physico chemical analysis</b>				
Protein%	0.83	0.87	0.89	0.91
Ash%	0.43	0.55	0.59	0.64
Acidity%	0.41	0.37	0.35	0.33
Moisture%	30	29.32	29.12	28.92
Total solids%	70	70.68	70.88	71.08
Antioxidant activity%	51.6	50.3	48.3	46.4
Vitamin C	51.2	47.6	45.4	43.0
Vitamin A	0.55	0.74	0.91	0.98
<b>Organoleptic score (9 point hedonic scale)</b>				

Coloure and appearance	7.3	7.5	7.7	8.0
Body and texture	7.6	7.7	7.8	8.0
Flavour & taste	7.6	7.7	7.8	8.0
Overall acceptability	7.6	7.5	7.8	7.9
<b>Microbiological analysis</b>				
SPC ( $\times 10^3$ ) (cfu/g)	4.6	4.4	4.3	4.3
Yeast and mould (cfu/g)	8.0	7.8	7.7	7.5
Coliform (per/g)	Nil	Nil	Nil	Nil
<b>Cost of ingredients</b>				
Cost (Rs/100g)	17	19.06	18.86	18.66

### Effect of ratio of orange Juice, Carrot Juice, basil powder, Agar-agar, and Sugar on Physico-chemical and microbiological analysis of candy samples

The protein ( $\mu\text{g}/100\text{ g}$ ) content of candy samples of different treatments increased significantly ( $p < 0.05$ ). The protein of T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 0.83, 0.87, 0.89 and 0.91 respectively. The ash percentage of candy samples of different treatments decreased significantly ( $p < 0.05$ ). The ash percentage of T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 0.43%, 0.55%, 0.59% and 0.64% respectively. The acidity acid (mg/100) of candy samples of different treatments *viz.*, T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 0.41%, 0.37%, 0.35% and 0.33% respectively. There was significant difference among the treatments ( $p < 0.05$ ). The antioxidant activity of candy samples of different treatments *viz.*, T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 51.2%, 50.3%, 48.3% and 46.4% respectively. There was significant difference among the treatments ( $p < 0.05$ ). The moisture percentage for candy samples of treatments T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 30%, 29.32%, 29.12% and 28.92% respectively. There was significant difference among the treatments ( $p < 0.05$ ). The total solid percentage for candy samples of treatments T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 70%, 70.68%, 70.88% and 71.08% respectively. There was significant difference among the treatments ( $p < 0.05$ ). The vitamin C percentage of candy samples T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> of treatments was found to be 51.2%, 47.6%, 45.6% and 43.0% respectively. There was

significant difference among the treatments ( $p < 0.05$ ). The vitamin A percentage of candy samples T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> of treatments was found to be 0.55%, 0.74%, 0.91% and 0.98% respectively. There was significant difference among the treatments ( $p < 0.05$ ).

Standard plate count of candy samples of different treatments *viz.*, T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 4.6 cfu/g, 4.4 cfu/g, 4.3 cfu/g and 4.3 cfu/g respectively. There was significant difference among the SPC. Yeast and mould count of candy samples of different treatments *viz.*, T<sub>0</sub>, T<sub>1</sub>, T<sub>2</sub> and T<sub>3</sub> was found to be 8.0 cfu/g, 7.8 cfu/g, 7.7 cfu/g and 7.5 cfu/g respectively. There was significant difference among the yeast and mould. The coli form counts of different samples were found to be absent.

### Effect of ratio of orange Juice, Carrot Juice, basil powder, Agar-agar, and Sugar on of candy samples

The candy samples were subjected to organoleptic evaluation before a panel of trained judges using a 9 point hedonic scale. The samples were evaluated for colour & appearance, body & texture, flavor and taste and overall acceptability. The organoleptic scores are presented graphically in Fig 1. From the figure, it can be observed that treatment T<sub>3</sub> scored significantly higher values for colour & appearance, body & texture, flavour & taste and overall acceptability as compared to other treatments including control. Therefore gummy candy samples of T<sub>3</sub> treatment was taken as the optimized product.

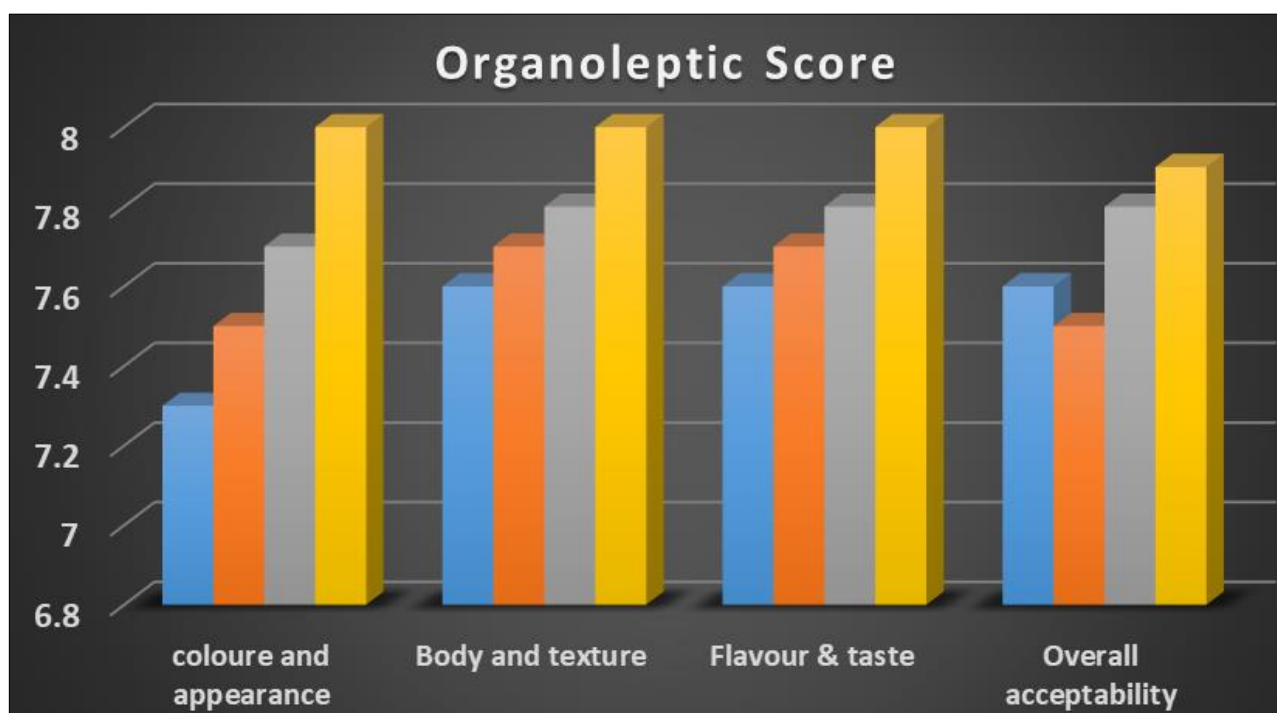


Fig 2: Organoleptic Score

## Conclusion

It is concluded that candy can be developed with different ratio of orange juice, carrot juice, and basil powder with addition of agar-agar and sugar.

Treatment T3 was found to have the best organoleptic qualities and obtained the highest score in the organoleptic evaluation (colour & appearance, body & texture, flavour & taste and overall acceptability). The cost of candy for Treatment T3 was Rs 18.66 per kg.

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