



P-ISSN: 2349-8528

E-ISSN: 2321-4902

[www.chemijournal.com](http://www.chemijournal.com)

IJCS 2021; 9(1): 1068-1070

© 2021 IJCS

Received: 20-11-2020

Accepted: 27-12-2020

**Palleboina Mounika**

College of Food Science and Technology, PJTS Agricultural University, Rudrur, Telangana, India

**Sudeepa Duguta**

College of Food Science and Technology, PJTS Agricultural University, Rudrur, Telangana State, India

**Vardhelly Rashmitha**

College of Food Science and Technology, PJTS Agricultural University, Rudrur, Telangana State, India

**TVN Padmavati**

College of Food Science and Technology, PJTS Agricultural University, Rudrur, Telangana State, India

**Corresponding Author:****Palleboina Mounika**

College of Food Science and Technology, PJTS Agricultural University, Rudrur, Telangana State, India

## Development and standardization of pumpkin (*Cucurbita maxima*) incorporated cookies

**Palleboina Mounika, Sudeepa Duguta, Vardhelly Rashmitha and TVN Padmavati**

**DOI:** <https://doi.org/10.22271/chemi.2021.v9.i1o.11367>

### Abstract

The present study was carried out with objective of utilizing nutrient rich pumpkin to develop cookies. The pumpkin was incorporated into the cookies in the form powder and puree in different proportions. Pumpkin was pre-processed, dried and powdered. Pumpkin powder was replaced with wheat flour in 10, 20 and 30 percentage as A<sub>1</sub>, A<sub>2</sub> and A<sub>3</sub> respectively. The pumpkin puree was also replaced with wheat in 10, 20 and 30 percentage as B<sub>1</sub>, B<sub>2</sub> and B<sub>3</sub>. Sensory analysis was done by trained panel by 9 point hedonic scale. Pumpkin powder incorporated cookies had high overall acceptability compared pumpkin puree cookies. A<sub>2</sub> was found to be highly acceptable with significant difference. Proximate analysis was carried out for all the samples. The proximate analysis showed moisture  $1.72 \pm 0.025$ , ash  $3.24 \pm 0.025$ , protein  $8.65 \pm 0.06$ , fat  $22.94 \pm 0.015$ , carbohydrate  $60.67 \pm 0.03$  and fiber  $2.55 \pm 0.03$ .

**Keywords:** Pumpkin, cookies, pumpkin powder

### Introduction

Pumpkin (*Cucurbita maxima*) is annual climber, belonging to cucurbitaceae family. It is cultivated in many countries like Mexico, Argentina, India, China and also in some parts of Europe. Popular species of pumpkin are *C. Maxima*, *C. Moschata* and *C. Pepo*. In India most of the cultivated species belongs to *C. maxima*. It is known for its edible fruit, seed and greens (Stovel, 2005) [9]. Fruit is used as vegetable and used in preparation of squashes. Seeds are used in the preparation of sweets or consumed as snacks.

In parts of the world pumpkin is used as herbal medicine because of its biologically active components. Pumpkin is rich in carotenoids, polysaccharides, oils, sterols, para amino benzoic acid and good amount of vitamins and minerals. Pumpkin seeds are of high protein, low in fat content and they are good source of elements like Potassium Magnesium, Copper, Zinc, Selenium and Molybdenum (Elinge *et al.*, 2012) [4]. The phyto-constituents of pumpkin make it vital in different types of diet. Pumpkin has anti-diabetic, anti carcinogenic, antimicrobial and antioxidant properties. (Mukesh *et al.*, 2012). All these benefits made it essential to include in our daily diet. Large size of fruit is a major limitation, to overcome this many processing methods like drying or dehydration are applied to make flour. (Akpınar and Bicer, 2006) [2] The bio availability is increased by drying as it breaks up cellular structure and emulsifies carotenoids. In bakery products to replace the nutritional and sensory properties of wheat flour other fiber sources can be supplemented. (Stanley, 2006) [8].

The objective of this study to develop cookies by replacing the wheat flour with pumpkin puree and pumpkin flour in different proportions and to carry out proximate analysis of developed product. The demand for the bakery products is increasing in which cookies have special place. To meet sensorial and nutritive expectation of the customers, these cookies are being developed and standardized.

### Materials and Methods

#### Sources of raw material and preparation

Raw materials used were purchased from local market of Bodhan. Pumpkin was selected based on soundness, cleanliness, free from pest damage or mechanical damage. (Gupta, 2004) [5] The peel and seeds were removed. The peeled pumpkin was cut into cubes of small size and blanching was done by using hot water.

Cubes were dried to about 3-4% (db) moisture content. Grinding was done using domestic grinder for 1 minute. The powder was sieved using 140 mesh sieve and packed in aluminum polythene laminated pouches. Other Ingredients wheat flour, hydrogenated vegetable oil, salt, sugar were purchased from local market.

### Formulations for the Preparation of Pumpkin Powder Cookies

#### Development and standardization of pumpkin incorporated cookies

Different proportion of pumpkin powder and puree was incorporated into the cookies and standardization was done.

**Table 1:** Formulation for control cookies

Ingredients	Quantity(g)
Wheat flour	100
Sugar	50
Shortening	60
Baking powder	0.5
Egg	10

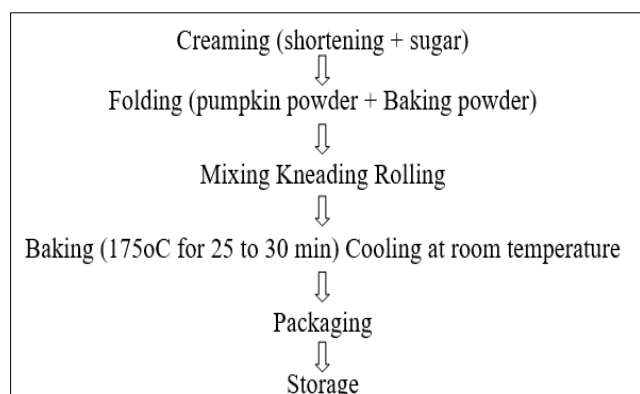
**Table 2:** Formulation for pumpkin powder incorporated cookies

Ingredients	Quantity(in gram)		
	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
Wheat flour	90	80	70
Pumpkin powder	10	20	30
Sugar	50	50	50
Shortening	60	60	60
Baking powder	0.5	0.5	0.5
Egg	10	10	10

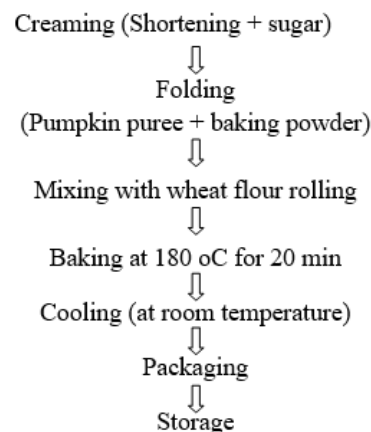
**Table 3:** Formulation for pumpkin puree incorporated cookies

Ingredients	Quantity(in gram)		
	B <sub>1</sub>	B <sub>2</sub>	B <sub>3</sub>
Wheat flour	90	80	70
Pumpkin puree	10	20	30
Sugar	50	50	50
Shortening	60	60	60
Baking powder	0.5	0.5	0.5
Egg	10	10	10

### Experimental procedure



**Fig 1:** Overall methodology for preparation of pumpkin powder incorporated cookies



**Fig 2:** Overall methodology for preparation of pumpkin puree incorporated cookies

### Sensory evaluation for pumpkin powder and pumpkin puree incorporated cookies

Pumpkin powder and puree incorporated cookie samples A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>, B<sub>1</sub>, B<sub>2</sub> and B<sub>3</sub> were given to the control panel members along with control sample for analyzing organoleptic properties. Based on the 9 point hedonic scale semi trained panelist evaluated the samples based on the color, flavor, appearance, texture and overall acceptability. (Amerine MA, 1967) [1].

### Nutrient Analysis of formulated pumpkin powder and pumpkin puree incorporated cookies

Nutrient analysis such as total carbohydrate, protein, fat and moisture content was analyzed, evaluated for formulated pumpkin powder and pumpkin puree cookies using AOAC method (2000) [3].

### Result and Discussion

#### Sensory Evaluation of pumpkin powder and pumpkin puree incorporated cookies

Based on 9 point hedonic scale ranging from point 9 'like extremely' to 1 'dislike extremely' the result showed that pumpkin powder incorporated cookies showed more overall acceptability than pumpkin puree incorporated cookies. In between A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub> samples A<sub>2</sub> had more acceptability based on all sensory attributes.

#### Nutrient Analysis of formulated pumpkin powder and pumpkin puree incorporated

Proximate analysis for both types of cookies was done and the results are depicted in the following tables

**Table 4:** Proximate composition of pumpkin powder incorporated cookies

Parameters	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
Ash	1.62 ± 0.03	1.72 ± 0.025	1.81 ± 0.037
Moisture	2.9 ± 0.03	3.24 ± 0.025	3.35 ± 0.025
Protein	8.40 ± 0.04	8.65 ± 0.06	8.84 ± 0.04
Fat	22.94 ± 0.03	22.94 ± 0.015	23.12 ± 0.02
Carbohydrate	62.74 ± 0.025	60.67 ± 0.03	59.83 ± 0.035
Fiber	1.37 ± 0.015	2.55 ± 0.03	3.04 ± 0.02

Values are expressed as mean ± standard deviation

**Table 5:** Proximate composition of pumpkin puree incorporated cookies

Parameters	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>
Ash	1.77 ± 0.01	1.79 ± 0.02	1.8 ± 0.01
Moisture	2.57 ± 0.02	2.56 ± 0.02	2.57 ± 0.02
Protein	9.28 ± 0.26	9.5 ± 0.06	9.57 ± 0.07
Fat	12.18 ± 0.29	11.98 ± 0.02	11.56 ± 0.30
Carbohydrate	75.07 ± 0.02	74.85 ± 0.04	74.16 ± 0.03
Fiber	0.93 ± 0.02	0.96 ± 0.01	0.98 ± 0.01

Values are expressed as mean ± standard deviation

### Conclusion

In this study the pumpkin powder and puree incorporated cookies were developed and standardized, which have high nutritive value. Based on the sensory evaluation the pumpkin powder incorporated cookies were having optimum sensorial characteristics compared to pumpkin puree incorporated cookies. A<sub>2</sub> which is having 80:20 ratios of wheat flour and pumpkin powder was superior. By this replacement the gluten content and glycemic index is lowered where protein and fiber content was increased.

### Reference

1. Amerine MA, Pangborn RM, Roessless EB. Principles of sensory evaluation of food. In: Food Science and Technology Monographs Academic Press, New York 1967, 338-339.
2. Akpinar EK, Midilli A, Bicer Y. The first and second law analyses of thermodynamic of pumpkin drying process. Journal of Food Engineering 2006;2:320-331.
3. AOAC. Official methods of the Association of Official Agricultural Chemists, Washington, D. C, 11<sup>th</sup> Edn 2000.
4. Elinge CM, Muhammad A, Atiku FA, Itado AU, Peni IJ, Sanni OM *et al.* Proximate, Mineral and Anti-nutrient Composition of Pumpkin (*Cucurbita pepo* L) Seed Extract. International journal for plant research 2012;2(5):146-150.
5. Gupta S, Chaturve HJH, Lee WY. Quality characteristics of osmotic dehydrated sweet pumpkin by different drying methods. J Korean society of Food Science and Nutrition 2004;33(9):1573-1579.
6. Mukesh Y, Shalini J, Radha T, Prasad GBKS, Hariom Y. Medicinal and biological potential of pumpkin: an updated review. Nutrition Research Review 2010;23:184-190.
7. Nihar Soni, Anant Kulkarni S, Luv Patel. Studies on development on high protein cookies. International journal of chemical studies 2018;6(6):439-444.
8. Stanley P, Cauvain, Linda SY. Baked Products: Science, Technology and Practice, Blackwell publishing Ltd, UK 2006, 35.
9. Stovel DD. Pumpkin: A Super Food for All 12 Months of the Year. North Adams, MA: Storey Publishing 2005.