



FORMULATION AND STANDARDIZATION OF POP MUFFINS

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Abstract: pumpkin (cucurbitaceae) has been considered as an important nutritional and medicinal plant due to its health-promoting properties. It is growth in North America about 9000 years ago. The region was pumpkin are cultivated in India: Madhya Pradesh, Orissa and Uttar Pradesh. Its peels are present to investigate functional and nutraceutical constituents. It is rich source of nutritional components like oils, proteins, carbohydrates and minerals. Compounds including phenolics, flavonoids, tocopherols and carotenoids. The aim of study was to standardize the various food products pumpkin peel flour is incorporated with oats meal flour. Oats flour was such ingredients as crude protein, fat, crude fibre and ash. Due to their many benefits such as lowering blood sugar and cholesterol levels. Product was prepared by pumpkin peel powder, oats flour and All-purpose flour. This product was evaluated by a sensory panel member

Keywords: pumpkin peel, oats meal flour, mixing and baking.

1.1 INTRODUCTION:



Pumpkin name derived from Greek word "pepon" "Which, means "large melon ". The French name for "was "Pompon" and the English changed the latter to "pumplon". American colonizer are swap "pumpion" word to "pumpkin " the name Which still is associated with vegetable. Pumpkin arised in North America since 9000 years ago. The earlier pumpkin kernels have been establish in Mexico and date back to somewhere between 7000- 5550B.C. Pumpkins (along with other forms of squash) were a historically important food staple among Native American. .Most in the gourd family, usually described by a hard orange rind with different grooves. Pumpkin's botanical name is cucurbita pepo. Region were pumpkins are cultivated in India; Madhya Pradesh, Orissa, Uttar Pradesh, West Bengal. This crop is mainly produced on hills and nearby areas. So, for planting pumpkins in such area. Plant about 2 to 4 seeds per hill. The seed is sown at about 2.5 depths for best growth. Also, after seeding pumpkins, they should be thin to 1 plant per hill lately. It is used as herbal medicine functional food. Aims to investigate functional and nutraceutical constituents present in all three parts (peel, flesh and seeds) of pumpkin fractions are rich source of nutritional components like oils, proteins, carbohydrates and minerals. Compounds including, Phenolic, flavonoids, tocopherols, carotenoids. The pineapple peel, banana peel and pumpkin seed are used as a value added product like flour, and also pumpkin seed flour can be used for production of muffins, as a way of using by-products, leading to the variegation of products for the celiac individuals and meeting the demand of consumers for gluten – free products, with an improvement in the nutritional value. The fruits of pumpkin parts like flesh, seed, and peel have high amount of primary and secondary metabolites, including proteins, carbohydrates, lipid content and their phytochemicals. Benefits of pumpkin is a Rich in vitamins, minerals and antioxidants, pumpkin is incredibly healthy. It's a low calorie food product so it's used as a weight losing agent. Pumpkin rich in nutrients and antioxidants so it may raise immune system, help to protect eyesight, lower the risk of certain cancers and promote heart health and skin health. Pumpkin products cause some rare effects that are including stomach problems, diarrhoea and nausea. It's also cause itching rash and allergic reactions for some persons pumpkin name derived from Greek word "pepon" " Which, means " large melon ". The French name for "was "Pompon" and the English changed the latter to "pumplon". American colonizer are swap "pumpion" word to "pumpkin " the name Which still is associated with vegetable. Pumpkin arised in North America since 9000 years ago. The oldest pumpkin seeds have been found in Mexico and date back to somewhere between 7000- 5550B.C . Pumpkins (along with other forms of squash) were a historically important food staple among Native American. Pumpkin, fruit

of certain varieties of squash such as varieties of cucurbita pepo C. Moschata . And C. Most in the gourd family (cucurbitaceae), usually described by a hard orange rind with different grooves. Pumpkin's botanical name is cucurbita pepo. Region where pumpkins are cultivated in India; Madhya Pradesh, Orissa, Uttar Pradesh, West Bengal. This crop is mainly produced on hills and nearby areas. So, for planting pumpkins in such area. Plant about 2 to 4 seeds per hill. The seed is sown at about 2.5 depths for best growth. Also, after seeding pumpkins, they should be thin to 1 plant per hill later. It is used as herbal medicine functional food. Aims to investigate functional and nutraceutical constituents present in all three parts (peel, flesh and seeds) of pumpkin fractions are rich source of nutritional components like oils, proteins, carbohydrates and minerals. Compounds including, Phenolic, flavonoids, tocopherols, carotenoids. The pineapple peel, banana peel and pumpkin seed are used as a value added product like flour, and also pumpkin seed flour can be used for production of muffins, as a way of using by-products, leading to the variegation of products for the celiac individuals and meeting the demand of consumers for gluten – free products, with an improvement in the nutritional value. The fruits of pumpkin including the flesh, seed, and peel are a rich source of primary and secondary metabolites, including proteins, carbohydrates, fatty acids and many their phytochemicals. Benefits of pumpkin is a Rich in vitamins, minerals and antioxidants, pumpkin is incredibly healthy. It's a low calorie food product so it's used as a weight loss agent. Pumpkin rich in nutrients and antioxidants so it may raise immune system, help to protect eyesight, lower the risk of certain cancers and promote heart health and skin health. Pumpkin products cause some rare effects that are including stomach problems, diarrhoea and nausea. It's also because itching rash and allergic reactions for some persons.



Oats are interestingly nutritious nourishment as they contain an amazing lipid profile and tall sums of dissolvable fibre. Oatmeal can be utilized as nourishment fixings in item such as bread, prepared to eat breakfast cereals and snacks bars. Oats can too be handled into oat bran and fibre to get high-fibre-containing divisions that can be utilized in an assortment of nourishment items. Botanical title of oats formally named Avena sativa could be a sort of cereal grain from the Poaceae grass family of plants. Oats (Avena sativa), tamed cereal grass (family Poaceae) developed essentially for its edible starchy grains. Oats are broadly developed within the calm locales of the world and are moment as it were to rye in their capacity to outlive in destitute soils. During the winter the seeds grow to store energy until it is time to develop. The oat plants finally begin to develop within the spring when the climate is hotter. They are an awfully great source of fibre, particularly beta glycan, and tall in vitamins, minerals and cancer prevention agents accepted to secure against heart infection. Oat (Avena sativa L) is an underutilized cereal and is considered as a wealthy source of protein, minerals, lipids-glycan and other phytochemicals. Oat flour was consolidated with wheat flour at distinctive concentrations for arrangement of breads and noodles. Breads were arranged by joining of oat flour in wheat flour at diverse levels 90,10,15,20 and 25%). Improving the dietary components such as rough protein, fibre, and fat and cinder substance in items. Due to their numerous benefits such as bringing down blood sugar and cholesterol levels, oats have picked up impressive consideration as a solid nourishment They're most commonly rolled or smashed and can be devoured as oatmeal (porridge) used in heated products, globule, muesli and granola. The pineapple peel flour banana peel flour and pumpkin seed flour can be utilized within the generation of biscuits as a way of utilizing buy-products driving to the expansion of items for the celiac people and assembly the request of buyers for gluten-free items with advancement within the wholesome values. The natural products of pumpkin counting the substance, seed and peel are a wealthy source of essential and auxiliary metabolites counting proteins Carbohydrates, greasy acids and numerous their phytochemicals. I select this item since of it makes a difference to maturing skin, weight misfortune, lower blood sugar levels, and a diminished hazard of heart malady.

The main objectives of this study are, to formulate the product, to standardize the product, to evaluate the sensory evaluation, and to estimate the nutrient content of the pumpkin muffins.

II. MATERIALS AND METHODS

This chapter deals with the materials and methods adopted for studying development of “pumpkin peel flour incorporated with oats meal flour”. The study was conducted in the Department of Food Science and Processing Management, SLCSC College (Autonomous) Madurai.

2.1 MATERIALS

2.1.1 PROCUREMENT OF RAW MATERIALS

The ingredient such as All-purpose flour, salt Baking powder, Baking soda, Butter, sugar, pumpkin peel powder, oats flour, Milk, Vennila essence and lemon salt.

2.1.2 PACKAGING MATERIALS

Packaging materials viz., Polythene, polypropylene Laminated pouches, PVC wrapped trays and Plastic jars were the Various Packaging Materials Used.

2.1.3 CHEMICALS

Thru chemicals and reagents used for the study where laboratory reagent (LR), Analytical reagent (AR) or Guarantee reagent (GR) Grades.

2.1.4 UTENSILS

Stainless steel vessels, Spoon, Plate, Ladle, Knife, Baking Tray, Microwave oven and bowl Where used for preparing and serving the developed products.

2.1.5 ENERGY SOURCE

Electric current and liquid petroleum Gas were used as heating sources.

2.1.6 WEIGHING BALANCE

A Weighing Balance with 0.1 kg Accuracy was used for the study to determine the weight of the subject.

2.2 Methodology

First dry ingredients like All- purpose flour, Pumpkin peel flour, oats meal flour, baking soda, baking powder, lemon salt and salt are mixed so that all ingredients are equally distributed for uniform taste. After that the butter and sugar are mixed and it is brought into creamy consistency. Then take a bowl adds a mixing of dry ingredients and add a creamy consistency of butter. Lastly add a milk and pinch of vanilla essence. Mixing all the dry and wet ingredients until it reaches a creamy consistency. And last add a pinch of lemon salt into a creamy consistency. While muffins covers are arranged in muffin trays. Pour the batter into muffin cups. Preheat the Microwave oven at 180° and for 15 minutes. Bake the muffins for 10 minutes.

Table no: 1- Muffins ratio for different variations.

S.no	Ingredients	Quantity(g)			
		Control	POP 1	POP 2	POP 3
1	All –purpose flour	64g	60g	65g	70g
2	Pumpkin peel flour		5g	10g	15g
3	Oats meal flour		35g	25g	15g
4	Butter	50g	50g	50g	50g
5	Sugar	120g	120g	120g	120g
6	Salt	0.29g	0.29g	0.29g	0.29g
7	Baking soda	2.84g	2.84g	2.84g	2.84g
8	Baking powder	5.69g	5.69g	5.69g	5.69g
9	Vennila essence	2.84g	2.84g	2.84g	2.84g
10	Milk	96g	96g	96g	96g
11	Lemon salt	0.25g	0.25g	0.25g	0.25g

2.2.1 DESIGN OF STUDY:

Formulation and Standardization of POP MUFFIN

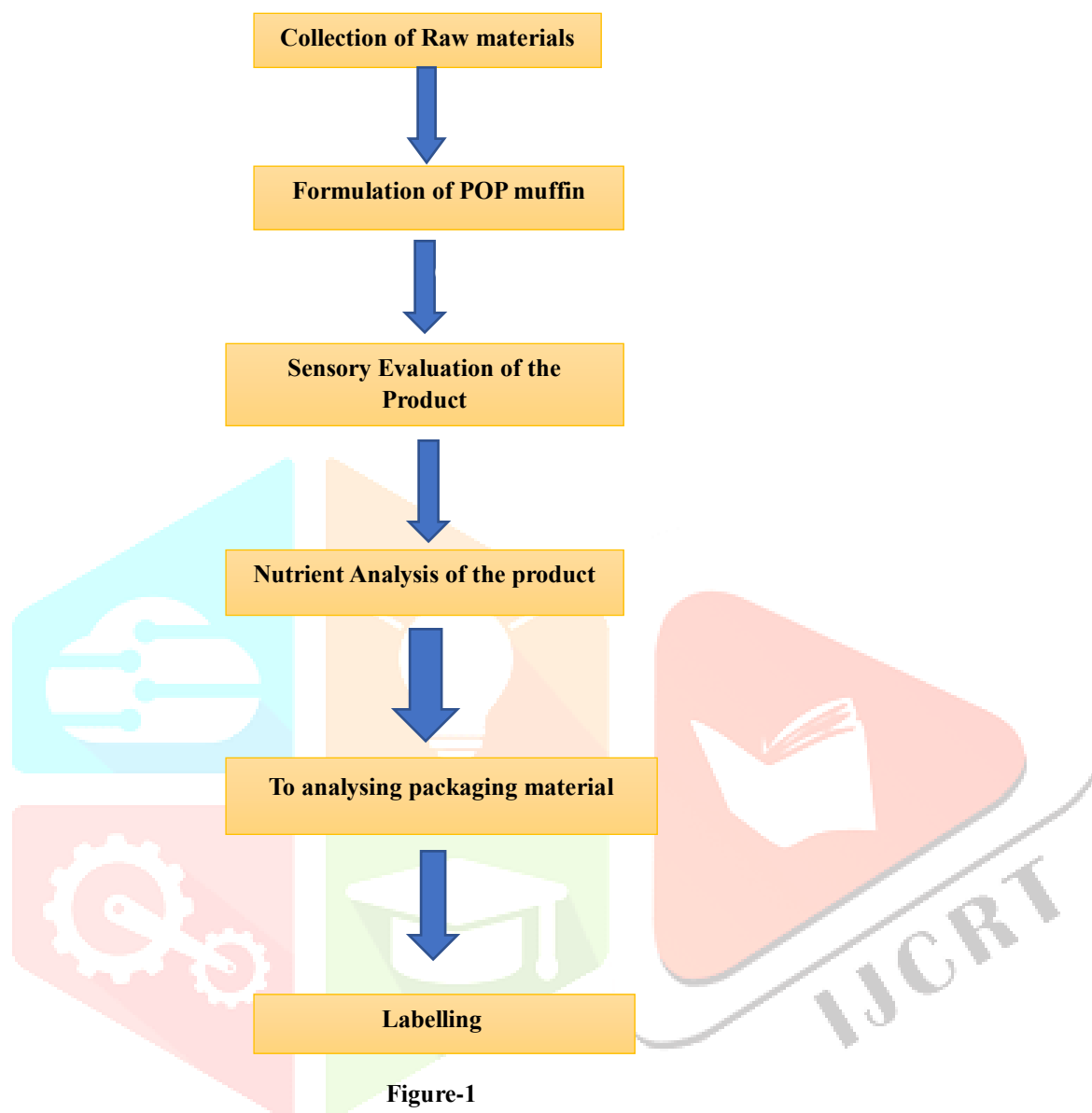


Figure-1

III .SENSORY EVALUATION

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 and eating a food Appearance, flavour and Mouth feel decides the acceptance of the food the sensory evaluation was conducted to assess the acceptability of the developed products. The developed pumpkin peel flour muffin was assessed by trained panel judges and by untrained panel members. Panel members who were cooperative and willing to participate in the study were selected and trained for evaluating food products. Pop muffins were prepared by incorporating Oats meal flour at the level of 5%, 10% and 15% respectively. It was evaluated by a panel of judges using score card with nine point scale rating.

POP1: - All-purpose flour - 60g

Pumpkin peel flour - 5g

Oats meal flour - 35g

POP2; - All-purpose flour - 65g

Pumpkin peel flour -10g

Oats meal flour -25g

POP3: - All-purpose flour -70g
 Pumpkin peel flour -15g
 Oats meal flour -15g

Pop muffins were prepared in different proportions were evaluated by panel members. Each sample was rated on a scale of five for the attributes which were taste, colour, flavour, appearance and consistency. Using the score of the above attributes the overall acceptability of the product was determined. The acceptability of the product from the scale of 1- 5 ranging from like extremely to dislike extremely.

Table-2 Overall Mean Score

S.no	Variations	Sensory attributes					Overall mean score
		Color	Flavor	Texture	Taste	Appearacne	
1	POP 1	4.44	4.36	4.61	4.27	4.33	4.40
2	POP 2	4.69	4.55	4.55	4.72	4.66	4.63
3	POP 3	4.22	4.13	4.27	4.22	4.33	4.23

3.1 NUTRIENT ANALYSIS

Nutrient quality can be assessed by chemical or instrumental analysis for specific nutrient (Norman et al., 2005). Nutrient analysis refers to the process of determining the nutrient content of the food and food products. The development and evaluation of pop muffins with were subjected to nutrient analysis using NIN nutritive value of Indian foods namely Protein, fat, fibre, CHO, energy,

Nutrient analysis of the standardized of pop muffins

The result stored the nutrients like Moisture, Protein, Fat, crude fibre, Ash, Carbohydrate, and energy

- In the presence of Moisture : 18.9%
- In the presence of Fat : 12.1%
- In the presence of crude fibre : 1.8%
- In the presence of Ash : 0.8%
- In the presence of Carbohydrate : 59.8%
- In the presence of Protein : 8.4%
- In the presence of Energy : 381.7Kcal

3.2 NUTRIENT ESTIMATION

3.2.1 ESTIMATION OF ENERGY

STRUCTURE

- Energy is calculated by summing the determined percentage of protein, fat, and carbohydrates in the sample with respective factor.

METHOD OF CALCULATION

$$\text{Energy kcal/ 100 mg} = 9 \times \text{Fat content} + 4 \times \text{Protein content} + 4 \times \text{Carbohydrate}$$

3.2.2 ESTIMATION OF PROTEIN:

STRUCTURE

The method is based on the principle that sulphuric acid in the presence of a catalyst helps in the digestion of food. All of the nitrogen is converted ammonium sulphate. By distillation in the presence of a base such as Noah it is converted into ammonia. The ammonia is trapped in an acid (egg. Boric acid), which is titrated against 0.1N hydrochloric acid. The method involves the reactions

METHODS OF CALCULATION

Nitrogen (N) % Wet basis = $\frac{14.01 * \text{Strength of Titrant (0.1N)} * (\text{TV}-\text{BV}) * 100}{W * 1000}$

W*1000

Protein content (%) = % N * C

Where,

TV- Titrant Value

BV – Blank Value

W - Weight of sample

C – Conversion factor – for cereals C=5.7, Pulses =6.25

3.2.3 ESTIMATION OF CARBOHYDRATE STRUCTURE

Total carbohydrate is calculated from the determined percentage of moisture, Protein, Fat, Total ash using the formula.

METHOD OF CALCULATION:

The carbohydrate content of the food can be determined by calculating the present remaining after all the other components have been measured,

$$\text{Carbohydrate (\%)} = 100 - (A + B + C + D)$$

A – Percentage of Moisture

B - Percentage of Protein

C - Percentage of Fat

D - Percentage of Total ash

$$\text{Carbohydrate (\%)} = 100 - (\text{Moisture} + \text{Protein} + \text{Fat} + \text{Total ash})$$

3.2.4 ESTIMATION OF FAT**STRUCTURE**

Same in thimble is extracted with solvent in Sechelt Extraction unit/ Scopus unit. Solvent reservoir is gently boiled. Solvent vapours are condensed by a water cooled condenser from which solvent drips into the thimble and extract the fat from the sample. The extraction will continue till the solute gets dissolved in solvent. Finally the solvent is collected separately and fat weight after drying.

METHOD OF CALCULATION

$$\text{Fat \% (w/w) dry basis} = \frac{W_2 - W_1}{W} \times 100 * \frac{100}{[100 - M]}$$

W – Weight of the sample taken for the test, g

W1 – Weight of empty Sechelt flask clean & dry

W2 – Weight in g of the Sechelt flask / beaker with the extracted fat

REFERENCE

1. As if M, (2017).Antioxidant, antibacterial and ant proliferative activities of pumpkin (cucurbit) peel and puree extracts an in vitro study. Pakistan journal of pharmaceutical sciences, 30(4). 1327-1334
2. Ana Carolina Burger Staichok (2016). Pumpkin peel flour (cucurbit maxima L.)- Characterization and Technology Applicability Journal of Food and Nutrition Research 4(5); 327-333
3. Diva Chatham,(2018).Effect of incorporation of oat flour on nutritional and organoleptic characteristics of bread and noodles, Current Research in Nutrition and Food Science Journal 6 (1), 148-156
4. Site Radian Omar (2022), Value – added products from Pumpkin waste, Malaysian journal of Science Health and Technology 8(1), 77- 84
5. Sue Atkins (1188-1192,1993) Reflection: review of the literature ,Journal of advanced nursing 18(8)
6. Ashes Husain (2021) , Determination of total phenolic, flavonoid, carotenoids and mineral contents in peel, flesh and seeds of pumpkin (cucurbit maxima), Journal of Food processing and Preservation 45(6), e15542

7. Tostem causer (2019), Development of pumpkin peel cookies and its nutritional composition, Journal of pharmacognosy and photochemistry 8(4), 370- 372.
8. Eminem Ayden (2011), Cooking quality and sensorial Properties of noodle supplemented with oat flour , Food science and Biotechnology 20, 507- 511
9. C Dory-Burn (2006),Water Barrier properties of treated –papers and application to sponge cake storage , Food research international 39(9),1002-1011
10. Maria Barolo (2022), Nutritional value, Phytochemical potential, and Therapeutic Benefits of Pumpkin.11(11), 1394
11. Ting Zhou(2007), Characterization of nutritional components and utilization of pumpkin Food 1 (2), 313-321
12. Masha Ahmad (2014), A review on oat (Avenal saliva L.) as a Dual – purpose crop , scientific research and essays 9 (4), 52-59
13. Sanity Raman (2021),A novel therapeutic ingredients for food applications, journal of Microbiology, Biotechnology and Food sciences , 756-760

