

DEVELOPMENT OF VALUE ADDED RECIPES USING PUMKIN SEEDS

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PROJECT REPORT

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CERTIFICATE

Certified that this project entitled *“Development of value added recipes using Pumpkin seeds”* is a bonafide record of research work done independently by Ms.Delby.N.J under my supervision and guidance and that no part of the study has been presented for any other university. This report is worth submitting for the award of Bachelor Degree in Science.

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DECLARATION

I, Delby.N.J hereby declare that the project work entitled *“Development of value added recipes using Pumpkin seeds”* is submitted to the University of Calicut in partial fulfillment of the requirements for the award of the Degree Bachelor of Science in Family and Community Science is a record of original research done by me under the supervision and guidance of Miss.Jaya Bajju Chalakkal Assistant Professor on contract, Department of Home Science, Vimala College, Thrissur. This work has not been submitted in part or full or any other Degree /Diploma/ Associateship/Fellowship of this or any other University.

Place: Thrissur
Date:

Delby.N.J
Sign

ACKNOWLEDGEMENT

I bow my head before God Almighty whose grace and blessings enabled me to complete this venture successfully. An opportunity to pay tributes to those who have contributed to the preparation of this project is indeed joyful. I am indebted to Dr. Sr. Mabel, Principal, Vimala College, Thrissur for supporting me in all my academic endeavor. I express my deep sense of grateful and heartfelt thanks to Dr. Karuna M.S. Head of the Department of Home Science, Vimala College, Thrissur for rendering the necessary facilities to conduct the study. I extend my whole hearted gratitude and indebtedness to Miss. Jaya Bajju Chalakkal Assistant Professor on contract, Department of Home Science, Vimala College, Thrissur, for her guidance, valuable advice and support for completing this project. I take this opportunity to thank all the teachers of Home Science Department for their assistance and encouragement for completing the work. I also express my gratitude to all the respondents without my gratitude to all the respondents without whose co-operation the study would not have been completed. I also express my gratitude to my classmates and our Home Science lab assistance for their support in the completion of this study. I take this opportunity to thank all the library staff of Vimala College, Thrissur for their help in providing necessary reference material available for the study. I place a record of my heartfelt thanks to my parents for their encouragement and financial support throughout the study. A word of apology to these I have not mentioned in person and a note of thanks to one and all who worked for the successful completion of the endeavor.

Delby.N.J

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INTRODUCTION

Pumpkin seeds—also known as pepitas - are flat, dark green seeds. Some are encased in a yellow-white husk (often called the "shell"), although some varieties of pumpkins produce seeds without shells. Pumpkin seeds have a malleable, chewy texture and a subtly sweet, nutty flavor. While roasted pumpkins seeds are probably best known for their role as a perennial Halloween treat, these seeds are so delicious, and nutritious,

Pumpkin seeds contain a wide variety of antioxidant phytonutrients, including the phenolic acids hydroxybenzoic, caffeic, coumaric, ferulic, sinapic, protocatechuic, vanillic and syringic acid; and the lignans spinoselinol, medioresinol and lariciresinol. Pumpkins seeds also contain health-supportive phytosterols, including beta-sitosterol, sitostanol and avenasterol. Pumpkin seeds are a very good source of phosphorus, magnesium, manganese and copper. They are also a good source of other minerals including zinc and iron. In addition, pumpkin seeds are a good source of protein.

Pumpkin seeds are an edible seed typically roasted for consumption. They are a common ingredient in Mexican cuisine and are often eaten as a healthful snack. The seeds of the pumpkin are sometimes referred to as pepitas, Spanish for "little seed of squash." This Medical News Today Knowledge Center feature is part of a collection of articles on the health benefits of popular foods. It provides a nutritional breakdown of pumpkin seeds, an in-depth look at their possible health benefits, how to incorporate more pumpkin seeds into your diet, and any potential health risks of consuming pumpkin seeds. Consuming fruits and vegetables of all kinds has long been associated with a reduced risk of many lifestyle-related health conditions.

Many studies have suggested that increasing consumption of plant foods like pumpkin seeds decreases the risk of obesity, diabetes, heart disease, and overall mortality while promoting healthy complexion and hair, increased energy, and overall lower weight. Pumpkin seeds are exceptionally high in magnesium, one of the seven essential macrominerals. Two tablespoons of pumpkin seeds contain 74 milligrams of magnesium, about 25 percent of the daily recommended dietary allowance. Magnesium plays an important role in over 300 enzymatic reactions within the body, including the metabolism of food and synthesis of fatty acids and proteins. Magnesium is vital for the proper functioning of muscles. Magnesium deficiency, especially prevalent in older populations, is linked to insulin resistance, metabolic syndrome, coronary heart disease, and osteoporosis. Magnesium is important for bone formation. High magnesium intake is associated with a greater bone density and has been shown to decrease the risk of osteoporosis in postmenopausal women. For every 100 milligrams/day increase in magnesium intake, the risk of developing type 2 diabetes decreases by approximately 15 percent. Low magnesium levels can impair insulin secretion and lower insulin sensitivity.

Improvement in lipid profiles has been seen with an intake of 365 milligrams of magnesium per day. Pumpkin seeds are rich in omega-3 and omega-6 fatty acids, antioxidants, and fiber. This combination has benefits for both the heart and liver.

The fiber in pumpkin seeds helps lower the total amount of cholesterol in the blood and decrease the risk of heart disease. Research to date suggests that omega-3s can decrease the risk of thrombosis and arrhythmias, which lead to heart attack, stroke, and sudden cardiac death. Omega-3s may also decrease LDL, total cholesterol, and triglyceride levels, reduce atherosclerosis (fatty buildup on artery walls), improve endothelial function (a measure of circulatory health), and slightly lower blood pressure.

Pumpkin seeds are a rich source of tryptophan, an amino acid. Tryptophan has been used to treat chronic insomnia because the body converts it into serotonin, the "feel-good" or "relaxing" hormone, and melatonin, the "sleep hormone."

A study published in Nutritional Neuroscience suggested that consuming tryptophan from a gourd seed alongside a carbohydrate source was comparable to pharmaceutical grade tryptophan for the treatment of insomnia.

Having a few pumpkin seeds before bed, with a small amount of carbohydrates such as a piece of fruit, may be beneficial in providing your body with the tryptophan needed for melatonin production.

It is estimated that over 80 percent of women worldwide have inadequate zinc intake. Low levels of zinc alter circulating levels of multiple hormones associated with the onset of labor. In addition to this, zinc is essential for normal immune function and prevention of uterine infections. All of these could potentially contribute to preterm birth.

REVIEW OF LITERATURE

Literature pertaining to the present study entitled “....” Is reviewed under the following headings.

1. Origin and distribution
2. Nutritive value of Pumpkin seeds
3. Health benefit of pumpkin seeds

Origin and distribution

Pumpkin seeds are an edible seed typically roasted for consumption. They are a common ingredient in Mexican cuisine and are often eaten as a healthful snack. They are sometimes referred to as pepitas, Spanish for "little seed of squash." This feature is part of a collection of articles on the health benefits of popular foods. It looks at the possible health benefits of pumpkin seeds, the nutritional content, how to use pumpkin seeds in the diet, and possible health risks.

The seeds of pumpkin (*Cucurbita* sp.) are generally considered to be agro-industrial wastes and discarded. In some parts of the world, the seeds are consumed raw, roasted or cooked, but only at the domestic scale. With the discovery of their richness in protein, fibres, minerals, polyunsaturated fatty acids and phytosterols, they are being regarded valuable for the food industry. The attention of food technologists has resulted in their foray into the commercial food sector. Food companies are experimenting with their incorporation into a slew of savouries and consumers are showing interest in them. Also, their beneficial effects on blood glucose level, immunity, cholesterol, liver, prostate gland, bladder, depression, learning disabilities and parasite inhibition are being validated. The conversion of these agro-wastes into value-added ingredients is likely to be a big step towards the global sustainability efforts; thus, it deserves more investigation.

Nutrient Density and Low Calorie Count May Promote Weight Loss Pumpkin is considered a nutrient-dense food. That means it's incredibly low in calories despite being packed with nutrients. In fact, pumpkin clocks in at under 50 calories per cup (245 grams) and consists of about 94% of water. Simply put, pumpkin is a weight-loss friendly food because you can consume more of it than other carb sources — such as rice and potatoes — but still take in fewer calories. What's more, pumpkin is a good source of fiber, which can help curb your appetite. Pumpkin is packed with nutrients and yet has under 50 calories per cup (245 grams). This makes it a nutrient-dense food. It's also a good source of fiber, which may suppress your appetite.

Pumpkins are loaded with nutrients that are great for your skin. For one, it's high in carotenoids like beta-carotene, which your body turns into vitamin A. In fact, one cup (245 grams) of cooked pumpkin packs 245% of the RDI for vitamin A. Studies show that carotenoids like beta-carotene can act as a natural sunblock. Once ingested, carotenoids are transported to various organs including your skin. Here, they help protect skin cells against damage from harmful UV rays. Pumpkin is also high in vitamin C, which is essential for healthy skin. Your body needs this vitamin to make collagen, a protein that keeps your skin strong and healthy. Moreover, pumpkins contain lutein, zeaxanthin, vitamin E and many more antioxidants that have been shown to boost your skin's defenses against UV rays.

. Pumpkin is high in beta-carotene, which acts as a natural sunblock. It also contains vitamins C and E, as well as lutein and zeaxanthin, which can help keep your skin strong and healthy.

Pumpkin is delicious, versatile and easy to add to your diet. Its sweet flavor makes it a popular ingredient in dishes like custards, pies and pancakes. However, it works just as well in savory dishes such as roasted vegetables, soups and pastas. Pumpkins have a very tough skin, so it requires some effort to slice. Once you cut it, scoop out the seeds and any stringy parts, then slice the pumpkin into wedges. The seeds are also edible and packed with nutrients which offer many other benefits. For instance, pumpkin seeds may improve bladder and heart health. Pumpkin is also available pre-cut or canned, giving you flexibility with your recipes and preparation. When buying canned, be sure to read labels carefully, as not all products will be 100% pumpkin and you may want to avoid added ingredients, particularly sugar. The easiest way to eat pumpkin is to season it with salt and pepper and roast it in the oven. Many people also enjoy making it into pumpkin soup, especially during winter.

Pumpkin, once sliced and cut, can be easily roasted, puréed into soup or baked into pies. Its seeds are also edible and highly nutritious.

Nutritive value of Pumpkin seeds

Pumpkin seeds contain a high amount of mineral support that benefit men and women alike. They are a great source of zinc, magnesium, manganese, phosphorous, copper and iron. They also contain some protein, vitamin E and healthy Omega-3 fats.

The magnesium found in pumpkin seeds can be helpful for managing blood pressure, reducing the risk of heart disease, regulating blood sugar levels, improving quality sleep and helping with digestion. Pumpkin seeds are a great natural source of magnesium, which many people are actually deficient in! Magnesium is a natural muscle relaxant and is the anti-stress mineral. Consuming adequate magnesium can help with anxiety or tense muscles.

Pumpkins seeds also contain Omega-3 fats. Fat is an essential macronutrient that can help you stay full longer and support hormone balance. The antioxidants and Omega-3 fats found in these seeds have also been known to reduce inflammation, which may help protect against disease.

The phytochemical composition renders the seeds valuable for nutritional purposes. Stevenson et al. [1] studied several pumpkin cultivars (*Cucurbita maxima* D.), for their seed oil content, fatty acid composition and tocopherol content. The oil content ranged from 11 to 31 %. Total unsaturated fatty acid content ranged from 73 to 81 %. The predominance of linoleic, oleic, palmitic and stearic acids was observed. The α -tocopherol content of the oils ranged from 27 to 75 mg/g, while γ -tocopherol ranged from 75 to 493 mg/g. Ryan et al. determined the levels of phytosterols, squalene and tocopherols in pumpkin seeds. The method comprised acid hydrolysis and lipid extraction followed by alkaline saponification, prior to analysis by HPLC. Beta-sitosterol was the most prevalent phytosterol, ranging in concentration from 24.9 mg/100 g seed. Squalene was particularly abundant (89 mg/100 g) and the total oil content amounted to 42.3 % (w/w) in pumpkin seeds. Veronezi and Jorgereported variation in total phenolic compounds in the lipid fractions of different cultivars of pumpkins (Mini Paulista and Nova Caravela showed highest). Kim et al. [4] reported that the major fatty acids in the pumpkin seeds were palmitic, stearic, oleic and linoleic acids. *C. pepo* and *C. moschata* seeds had

significantly more c-tocopherol than *C. maxima*, whose seeds had the highest b-carotene content. *C. pepo* seeds had significantly more b-sitosterol than the others. Among 11 types of nuts and seeds profiled for their nutritional abundance, pumpkin seeds scored highest for iron content (95.85 ± 33.01 ppm)

Nutritive value of Pumpkin seeds per 100g

Components	Nutrient value (per 100g)	Percentage of RDA
Energy	559 kcal	28
Carbohydrates	10.71 g	8
Protein	30.23 g	54
Total fat	49.05 g	164
Cholesterol	0 mg	0
Dietary fibre	6 g	16
Vitamins		
Folate	58 lg	15
Niacin	4.987 mg	31
Pantothenic acid	0.750 mg	15
Pyridoxine	0.143 mg	11
Riboflavin	0.153 mg	12
Thiamine	0.27 mg	23
Vitamin A	16 IU	0.5
Vitamin C	1.9 lg	3
Vitamin E	35.10 mg	237
Electrolytes		
Sodium	7 mg	0.5
Potassium	809 mg	17
Minerals		
Calcium	46 mg	4.5
Copper	1.343 mg	159
Iron	8.82 mg	110
Magnesium	592 mg	148
Manganese	4.543 mg	198
Phosphorus	1,233 mg	176
Selenium	9.4 lg	17
Zinc	7.81 mg	71
Phytonutrients		
Carotene-b	9 lg	–
Cryptoxanthin-b	1 lg	–
Lutein-zeaxanthin	74 lg	–

Vitamin A, Lutein and Zeaxanthin May Protect Your Eyesight It's quite common for eyesight to diminish with age. Fortunately, eating the right nutrients can lower your risk of sight loss. Pumpkin is plentiful in nutrients that have been linked to strong eyesight as your body ages. For instance, its beta-carotene content provides your body with necessary vitamin A. Research shows that vitamin A deficiency is a very common cause of blindness. In an analysis of 22 studies, scientists discovered that people with higher intakes of beta-carotene had a significantly lower risk of cataracts, a common cause of blindness. Pumpkin is also one of the best sources of lutein and zeaxanthin, two compounds linked to lower risks of age-related macular degeneration (AMD) and cataracts. Additionally, it contains good amounts of vitamins C and E, which function as antioxidants and may prevent free radicals from damaging your eye cells. •Pumpkin seeds are a good source vitamin E; they contain about 35.10 mg of tocopherol per 100 g.

Health Benefits of pumpkin seeds

Pumpkin is a type of winter squash that belongs to the Cucurbitaceae family. It's native to North America and particularly popular around Thanksgiving and Halloween. In the US, pumpkin typically refers to *Cucurbita pepo*, an orange type of winter squash. In other regions, such as Australia, pumpkin may refer to any type of winter squash. While commonly viewed as a vegetable, pumpkin is scientifically a fruit, as it contains seeds. That said, it's nutritionally more similar to vegetables than fruits. Beyond its delicious taste, pumpkin is nutritious and linked to many health benefits.

Anti-oxidant activity

While antioxidant nutrients are found in most WHFoods, it's the diversity of antioxidants in pumpkin seeds that makes them unique in their antioxidant support. Pumpkin seeds contain conventional antioxidant vitamins like vitamin E. However, not only do they contain vitamin E, but they contain it in a wide variety of forms. Alpha-tocopherol, gamma-tocopherol, delta-tocopherol, alpha-tocomonoenol and gamma-tocomonoenol are all forms of vitamin E found in pumpkin seeds. These last two forms have only recently been discovered, and they are a topic of special interest in vitamin E research, since their bioavailability might be greater than some of the other vitamin E forms. Pumpkin seeds also contain conventional mineral antioxidants like zinc and manganese.

Phenolic antioxidants are found in pumpkin seeds in a wide variety of forms, including the phenolic acids hydroxybenzoic, caffeic, coumaric, ferulic, sinapic, protocatechuic, vanillic, and syringic acid. Antioxidant phytonutrients like lignans are also found in pumpkin seeds, including the lignans pinoresinol, medioresinol, and lariciresinol. Interestingly, this diverse mixture of antioxidants in pumpkin seeds may provide them with antioxidant-related properties that are not widely found in food. For example, the pro-oxidant enzyme lipoxygenase (LOX) is known to be inhibited by pumpkin seed extracts, but not due to the presence of any single family of antioxidant nutrients (for example, the phenolic acids described earlier). Instead, the unique diversity of antioxidants in pumpkin seeds is most likely responsible for this effect.

Diabetes

Most of the evidence we've seen about pumpkin seeds and prevention or treatment of diabetes has come from animal studies. For this reason, we consider research in this area to be preliminary. However, recent studies on laboratory animals have shown the ability of ground pumpkin seeds, pumpkin seed extracts, and pumpkin seed oil to improve insulin regulation in diabetic animals and to prevent some unwanted consequences of diabetes on kidney function. Decrease in oxidative stress has played a key role in many studies that show benefits of pumpkin seeds for diabetic animals.

Antimicrobial Benefits

Pumpkin seeds, pumpkin seed extracts, and pumpkin seed oil have long been valued for their anti-microbial benefits, including their anti-fungal and anti-viral properties. Research points to the role of unique proteins in pumpkin seeds as the source of many antimicrobial benefits. The lignans in pumpkin seeds (including pinoresinol, medioresinol, and lariciresinol) have also been shown to have antimicrobial—and especially anti-viral—properties. Impact of pumpkin seed proteins and pumpkin seed phytonutrients like lignans on the activity of a messaging molecule called interferon gamma (IFN-gamma) is likely to be involved in the antimicrobial benefits associated with this food.

Cancer-Related Benefits

Because oxidative stress is known to play a role in the development of some cancers, and pumpkin seeds are unique in their composition of antioxidant nutrients, it's not surprising to find some preliminary evidence of decreased cancer risk in association with pumpkin seed intake. However, the antioxidant content of pumpkin seeds has not been the focus of preliminary research in this cancer area. Instead, the research has focused on lignans. Only breast cancer and prostate cancer seem to have received much attention in the research world in connection with pumpkin seed intake, and much of that attention has been limited to the lignan content of pumpkin seeds. To some extent, this same focus on lignans has occurred in research on prostate cancer as well. For these reasons, we cannot describe the cancer-related benefits of pumpkin seeds as being well-documented in the research, even though pumpkin seeds may eventually be shown to have important health benefits in this area.

Lymphocytic Leukemia

Pumpkin may be filling, but it's also a low-calorie superstar. "Canned pumpkin is nearly 90 percent water, so besides the fact that it helps keep you hydrated, it has fewer than 50 calories per serving," Kaufman says.

Sharp Vision

Pumpkin's brilliant orange coloring comes from its ample supply of beta-carotene, which is converted to vitamin A in the body. Vitamin A is essential for eye health and helps the retina absorb and process light. A single cup of pumpkin contains over 200 percent of most people's recommended daily intake of vitamin A, making it an outstanding option for optical health. Pumpkin also contains lutein and zeaxanthin, two antioxidants that are thought to help prevent cataracts and may even slow the development of macular degeneration.

Better Immunity

Looking for a way to ward off illness and improve your immune system? Try pumpkin. The large shot of vitamin A the fruit provides helps your body fight infections, viruses and infectious diseases. Pumpkin oil even helps fight various bacterial and fungal infections. Plus, pumpkin is packed with nearly 20 percent of the recommended amount of daily vitamin C, which may help you recover from colds faster.

Younger-Looking Skin

Eating pumpkin can help you look younger (beta-carotene in pumpkin helps protect us from the sun's wrinkle-causing UV rays), but the pulp also makes a great, all-natural face mask that exfoliates and soothes. All you need is 1/4 cup pureed pumpkin (not pumpkin pie), an egg, a tablespoon of honey and a tablespoon of milk. Mix, then apply it, wait for 20 minutes or so and wash it off with warm water.

METHODOLOGY

Methodology of the study entitled “ Development of value added recipes using pumpkin seeds” includes the following steps

1. Collection of raw material
2. Development of recipe
3. Selection of judges
4. Organoleptic evaluation of recipes

5. Nutritive value of formulated recipe

1. Collection of raw material

The sample selected for the study was pumpkin seeds. The seeds were collected from vegetable shops. The price of pumpkin seeds were economic.

2. Development of recipe

Recipes were formulated based on different cuisins which include main course, desert, welcome drink and snacks. Classification of recipes based on different cuisine is presented in 10 recipes were developed for the present study were immunity booster, tikba dosa, labu chutney, tikba chapathi, nutritious laddoo, ... pompoen laddoo, dates candy, pompoen Pamela candy.

Recipes**1. Pepon dates candy**

Pumpkin seeds	-	40g
Dates	-	50g
Chocolate	-	10g

Soak pumpkin seeds in water. Drain off water. Add dates and blend it well. Melt chocolate. To the butter paper add the blended mixture and chocolate above it. Let it cool. Cut into pieces and serve.



Plate 2 : Nutricio Ladoo 1



Plate 3 : Immunity Booster

4. Pompoen Panela candy

- Pumpkin seed - 50g
- Jaggery - 40g
- Ghee - 10g

Heat a pan on moderate flame. Add pumpkin seeds and fry evenly. Allow it to cool. Heat pan, melt jaggery with water. Add pumpkin seed and mix well. Grease with little ghee inside a plate. Pour mix in to plate. Spread evenly over the plate. Cut as you desired. Allow it to cool in room temperature.



Plate 4 : Pompoen Panela Candy 1

Roast rice in a pan. Grind pumpkin seeds and rice in to powder. Heat pan, melt jaggery with water. Add it to pumpkin seed rice powder. Add coconut. Make it to ladoo.



Plate 5 : Dami Pompoen Ladoo

6. Tikba Dosa

- Rice - 50g
- Pumpkin seeds - 50g

Soak parboiled rice for 2 hours. Grind pumpkin seeds and soaked rice. Heat pan and make dosa.



Plate 6 : Tikba Dosa

7. Labu chutney

Pumpkin seed - 65g
Green chilli - 5g
Coconut - 20g
Onion - 10g
Blend all the ingredients. add salt and oil to season it

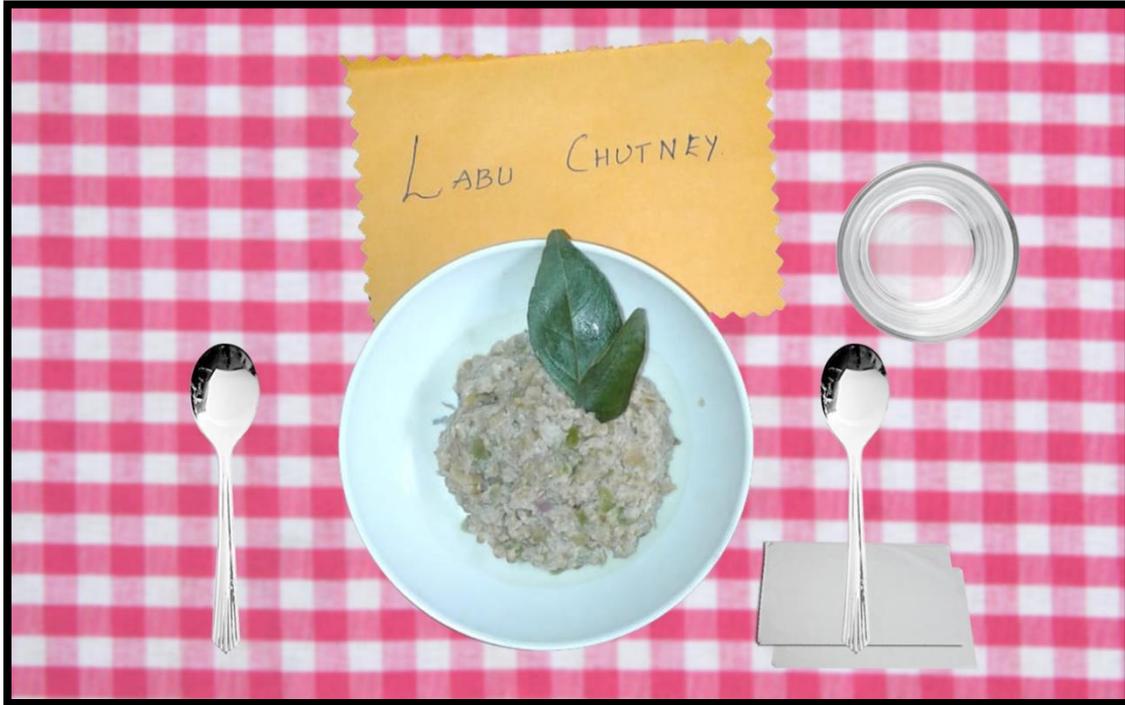


Plate 7 : Labu Chutney

8. Tikba Chapathi

Wheat flour - 50g
Pumpkin seeds - 50g

Grind seed in to powder. Mix wheat flour and pumpkin seed powder and make a dough. Make chapathi.

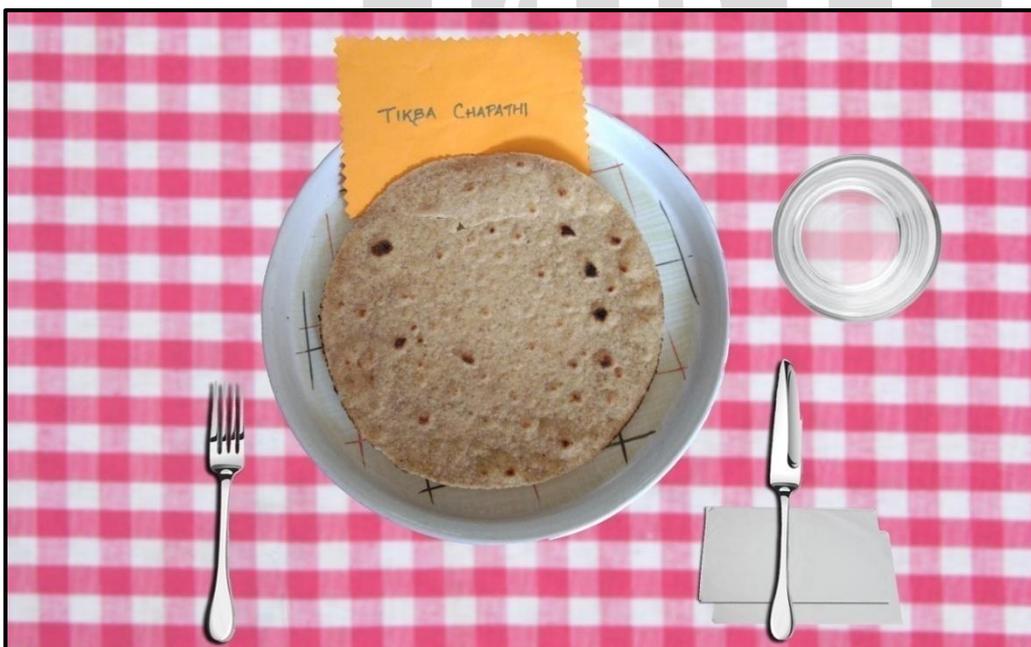


Plate 8 : Tikba Chapathi

and chilli into paste. Fry it in hot



Plate 9 : Pepita Snack

10. Pompoen Halwa

- Pumkin - 35g
- Jaggery - 30g
- Pumpkin seed - 25g
- Rice Flour - 10g

Cook pumpkin in pressure cooker. Add jaggery and boil it. Add rice flour with water and add to thicken it. Add cardamom powder to season it. Roast pumpkin seeds and mix with it . Serve hot.

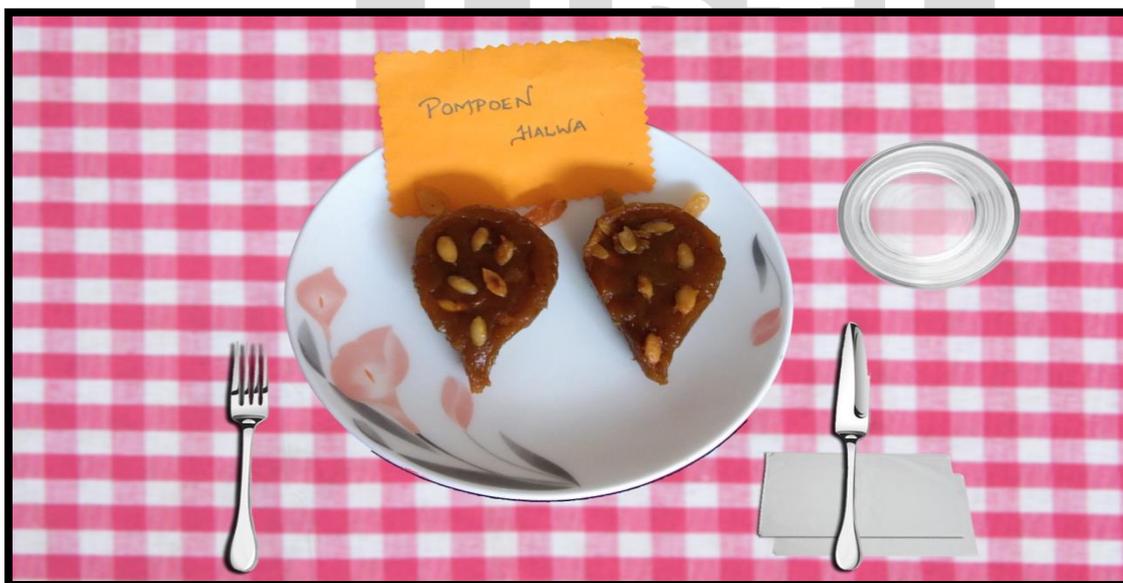


Plate 10 :Pompoen Halwa

3. Selection of judges

To assess the acceptability of the recipes through sensory evaluation, a panel of 14 judges including department teachet were selected. The selection criteria for the panel; members were ability to perceive and recognize the variations in the quality of different

food items. For the selection of pane members serial dilution test was used(Srilakshmi,2009). For carrying out the test, 5 different concentration of sugar solution was prepared. One among the fine solution was plain water as provided to them for rinsing the mouth after each member was asked to score the solutions according to their concentration by taking them

4. organoleptic evaluation of recipes

Food quality can be evaluated by sensory evaluation acceptability of product with respect to colour, texture, taste, appearance and overall acceptability was estimated using numerical score card. The recipes were evaluated organoleptically

5. Nutritive value of formulated recipes

Pumpkin seeds are high in their nutrient content. Pumpkin seeds are rich in health-benefiting vitamins, minerals, anti oxidants and essential aminoacids, like tryptophan and glutamate. They are rich in calcium, phosphorous, magnesium and potassium. The calculated nutrients were energy, proteins, fat, calcium, iron and phosphorous. Nutritive values of developed recipes were calculated using ICMR nutritive value of Indian Foods(2015). The nutritive values of each recipes are included in table.

Pompoen panela candy was a tasty sweet recipe. The sensory evaluation rated excellent for taste, texture and appearance and very good for flavor. The overall acceptability was excellent.

Pepita snack was a delicious snack. The sensory evaluation rated very good for colour, taste, texture, flavor and appearance. The overall acceptability was very good.

Pompoen halwa was a nutritious sweet, the sensory evaluation rated excellent for colour, taste., flavor, appearance and very good for texture. The overall acceptability was excellent.

RESULT AND DISCUSSION

The result and discussion pertaining to the study “Development of value added recipes using pumpkin seeds”. is discussed under following headings.

1. Development of recipes
2. Overall acceptability of recipes
3. Nutritive value of developed recipes

1. Development of recipes

Recipes are one of the most important factors leading to successful food products. 10 recipes were developed by including selected ingredient and cooking method suitable for the condition. Each ingredient was carefully measured and noted. Developed recipes were presented in plate.

2. Overall acceptability of recipes

Acceptability of the developed recipes is always judged through organoleptic evaluation. The agreements of the judges were measured as regarded to acceptability based on 5 parameters namely colour, texture, taste, flavor and appearance for 10 products namely immunity booster, Tikba dosa, Labu chutney, Tikba chapathi, Nutricio ladoo, Dami pompoen ladoo, Pepon dates candy, Pompoen Panela candy. Immunity booster was a delicious drink. The sensory evaluation rated excellent for colour, texture, appearance and very good for the taste and flavor. The overall acceptability was excellent.

Tikba dosa was a delicious breakfast. The sensory evaluation rated excellent for colour, taste, flavor, and appearance and very good for texture. The overall acceptability was excellent.

Labu chutney was a breakfast side dish. The sensory evaluation rated excellent for colour, texture, flavor, and appearance and very good for taste. The overall Tikba chapathi was a dinner recipe. The overall acceptability was excellent.

Tikba chapathi was a dinner recipe. The sensory evaluation rated. Excellent for colour, texture, flavor, appearance. The overall acceptability was excellent. Nutricio ladoo was a nutritious snack. The sensory evaluation rated excellent for taste, texture, flavours and appearance. Overall acceptability was excellent. Dami pompoen ladoo was a healthy snack. The sensory evaluation rated excellent for taste, flavor, and appearance and very good for texture. The overall acceptability was excellent. Pepon dates candy was a sweet recipe which can be used as a dessert. The sensory evaluation rated excellent for texture and flavor and very good for taste and flavor. The overall acceptability was excellent.

Mean Score of organoleptic evaluation of Pumpkin seed Recipes

Recipe	Colour	Taste	Texture	Flavour	Appearance	Overall
Immunity Booster	3	2	3	2	3	3
Tikba Dosa	3	2	2	3	3	3
Labu Chutney	3	2	3	3	3	3
Tikba Chapathi	3	3	3	3	3	3
Nutritio Ladoo	3	3	3	3	3	3
Dami Pompoen Ladoo	3	3	2	3	3	3
Pepon dates candy	3	2	3	2	3	3
Pompoen panela candy	3	3	3	2	3	3

Pepita snack	2	2	2	2	2	2
Pompoen Halwa	3	3	2	3	3	3

Overall acceptability of formulated Pumpkin seed Recipes

Recipe	Overall Acceptability
Immunity Booster	3
Tikba Dosa	3
Labu Chutney	3
Tikba Chapathi	3
Nutritio Ladoo	3
Dami Pompoen Ladoo	3
Pepon dates candy	3
Pompoen panela candy	3
Pepita snack	2
Pompoen Halwa	3

Nutritive value of developed recipe

The energy, protein, fat, calcium, iron and phosphorous content of the products developed for one portion was calculated by using the ICMR Nutritive value of Indian foods(2015). The details are given in the table.

The energy content of the developed recipes was considered . it was .. that Immunity booster(265kcal) contains highest amount of energy followed by Nutricio ladoo(242.3 Kcal), Tikba dosa(236.5Kcal),Tikba chappathi(234Kcal), pompoen panela candy(216.7Kcal), pepon dates candy(209.3Kcal),Pompoen halwa (155.4kcal),Dami pompoen ladoo(151.9kcal), Pepita snack(94.8kcal).Pepon dates candy(16.65g) has highest value of protein followed by nutricio ladoo(15.6g), Labu chutney(13.13g), Tikba chappathi(8.55g), Dami pompoen ladoo(6.4g), Tikba dosa(5.7g), Immunity booster(4.645g), pepita snack(3.68g), pompoen panela candy(2.66g), and pompoen Halwa(2.5g). Highest amount of fat is found in Dami pompoen ladoo(25.382g), followed by Immunity booster(23.844g), Labu chutney (22.23g), pepita snack (15.01g), Tikba chappathi (11.55g), Tikba dosa(10.9g), Pompoen panela candy(10.74g), pepon dates candy(8.772g), Nutritio ladoo(8.622g), and pompoen halwa(5.445g).

When comes to calcium content of these products it was seen that Pepon dates candy (68mg) has highest amount of calcium followed by Immunity booster(61.4mg),Nutricioladoo (48mg) pompoen panela candy (42mg), Tikba chappathi (34mg), Pompoen Halwa(33.4mg), Dami pompeon ladoo (23.6mg), Labu chutney (19mg),pepita snack (18mg), and Tikba dosa (14.5mg).

Pepon dates candy(4.01mg) has iron content followed by Tikba chappathi 2.9mg), Immunity booster (8.77mg), Dami Pompoen ladoo(1.704mg), Nutricioladoo(1.68mg),pompoenpanelacandy(1.506mg), pompeon halwa (1.271mg), Labu chutney(1.025mg), Tikba dosa(0.95mg) and Pepita snack (0.75mg).It was seen that Tikba chappathi (111mg) has highest amount of magnesium follwed by Tikba Dosa(75.5mg), Dami pompoen ladoo(72.4mg), pepita snack(63g), Labu chutney (58.5mg), Pompoen panela candy(45mg), Pompoen halwa(44.9mg), Nutitio ladoo(36mg), Pepon dates candy(36mg), and Immunity booster(35.2mg).

Nutritive value of formulated Recipe

Recipe	Energy (Kcal)	Protein(g)	Fat(g)	Calcium (mg)	Iron(mg)	Phosphorous (mg)
Pepon dates candy	209.3	16.65	8.772	68	4.01	36

Nutricio ladoo	242.3	15.6	8.622	48	1.68	36
Immunity booster	265	4.645	23.844	61.4	2.877	35.2
Pompoen panela candy	216.7	2.66	10.74	42	1.506	45
Tikba dosa	236.5	5.7	10.9	14.5	0.95	75.5
Dami Pompoen Ladoo	151.9	6.4	25.382	23.6	1.704	72.4
Labu chutney	113.2	13.13	22.23	19	1.025	58.5
Tikba chappathi	234	8.55	11.55	34	2.9	111
Pepita Snack	94.8	3.68	15.01	18	0.75	63
Pompoen Halwa	155.4	2.5	5.45	33.4	1.27	44.9

SUMMARY AND CONCLUSION

As a part of our 3rd year project we conducted "Development of value added recipes using pumpkin seeds". Based on this project we developed our own recipes using pumpkin seeds. Then we calculated the nutritive value of each dish.

An organoleptic evaluation based on the five qualities attributes such as colour, flavor, texture, appearance and taste. Ten products were prepared: pepon dates candy, Nutricio ladoo, Immunity booster, pompoen panela candy, Dami pompoen ladoo, Tikba dosa, labi Chutney, Tikba chappathi, Pepita Snack, Pompoen Halwa. The nutrient content of the best pumpkin seed incorporated product was assessed with reference to their energy, protein, fat, calcium, iron and magnesium. It was observed that Nutricio ladoo, Dami pompoen ladoo, Pompoen Panela Candy have higher acceptance. Pepon datez candy has highest amount of protein (16.65g), calcium (68mg), Iron (4.01mg). So according to nutritive value pepon dates candy is the best dish among the 10 dishes that we prepared. Pumpkin seed is rich in calcium. The incorporation of pumpkin seeds in the recipes will help to prevent calcium deficient diseases like Osteoporosis and increase bone density in children. Pumpkin seed is also rich in iron. The use of pumpkin seed is also rich in iron. The use of pumpkin seeds in different dishes will help to prevent iron deficiency anaemia in adolescent girls and women to a certain extent. The other micronutrient rich in pumpkin seed is magnesium. Magnesium is important for bone formation. It increases bone density and decreases risk of osteoporosis in postmenopausal women.

The developed recipes are simple and can be used in day to day life. Usually pumpkin seeds are used only in cultivation of pumpkin but from this project we analyzed and concluded that it is not just a material that is to be wasted but has tremendous qualities. It helps in the prevention of diabetes, heart disease, helps to improve vision and has antioxidant properties.

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Appendix – I

Sl.No	Concentration of sugar	1	2	3	4	5
1.	Nil					
2.	Low concentration					
3.	Medium Concentration					
4.	High concentration					
5.	Very high concentration					

Appendix – II

Score card for the Organoleptic evaluation of formulated Pumpkin seed Recipes

Recipe	Colour	Taste	Texture	Flavour	Appearance	Overall
Immunity Booster						
Tikba Dosa						
Labu Chutney						
Tikba Chapathi						
Nutritio Ladoo						
Dami Pompoen Ladoo						
Pepon dates candy						
Pompoen panela candy						
Pepita snack						
Pompoen Halwa						