



INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

SHELF LIFE STUDY ON SUPER SEED CANDIES

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Abstract

A product named superseeds candy was designed for all age groups, especially people suffering from co-morbidities like cardiovascular disease, diabetes, etc. This superseeds candy was made from five seeds eg. Pumpkin seeds, chia seeds, muskmelon seeds, poppy seeds and flax seeds. Seeds are small in size but are extremely nutritious; they are fiber rich, they contain good fats, great source of vitamins and minerals also. Shelf life study was done which included sensory evaluation by hedonic scale ranging from dislike a lot to like a lot. Evaluation was done on characteristics like appearance, aroma, taste, texture, mouth feel using a scoring method of sensory evaluation. Other attributes like marketing, budgeting, nutritional labeling, packaging were also studied.

Keywords: superseeds candies, high fiber, good fats, flax seeds, chia seeds, poppy seeds

Introduction

Nutrition is a process of nourishment, it is a biochemical and physiological process by which organism uses food to support its life. It includes ingestion, absorption, catabolism, excretion. Better nutrition is related to stronger immune system and health and low risk of diseases. Malnutrition includes both under nutrition and over nutrition and its prevalence is majorly for the poor people and rich people respectively^[1]. Longitudinal Ageing Study in India released by the Union Ministry of Health and Family Welfare on January 6, 2020 says two in three senior citizens in India suffer from chronic diseases and those aged above 45 years have single morbidity. Diagram below shows chronic health which includes cardiovascular diseases, hypertension, bone diseases, diabetes mellitus, lungs disorder, etc from people aged above 45 years till 69 years^[2].

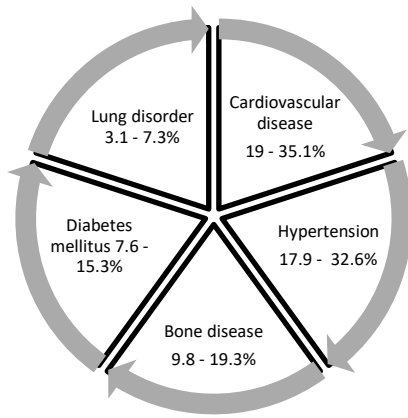


Figure no. 1- diagram showing percentage of various diseases

Seeds are extremely nutritious and they are great source of fiber. It is good source of vegetable protein for vegans and vegetarians. They contain healthy polyunsaturated & monounsaturated fats, vitamins, minerals, antioxidants which helps reduce cholesterol, blood sugar, blood pressure when we consume it as a part of daily diet. Flax seeds are an excellent source of fiber, omega – 3 fatty acids, ligans, etc. A lot of study has shown they may reduce cholesterol, blood pressure, even the risk of cancer. Chia seeds are also a good source of omega – 3 fatty acids and fiber which are effective at lowering blood sugar, reducing risk factors for heart disease. Pumpkin seeds are good source of monounsaturated and omega – 6 fatty acids, phosphorus, etc that may help improve symptoms of urinary disorders and heart health^[3]. Poppy seeds are good source of phosphorus, oleic acid, iron, calcium, etc. Phosphorus and calcium are important nutrients needed for healthy bones^[4]. Muskmelon seeds are rich in anti-oxidants and vitamin A, C, E, minerals like magnesium, phosphorus, potassium which is good for eyesight & controlling blood pressure level respectively^[5]. Thus the present study has been undertaken to provide vital nutrients with following objectives

Objectives

- To develop and standardize a healthy nutritious product
- To study the shelf life of a product by sensory evaluation
- To design a nutritional label
- To select and learn about various packaging materials
- To learn some entrepreneurship skills like budgeting, marketing, etc.

Methodology

An innovative food product was to be designed under the undergraduate program in a course named Food Product and Development. Many nutritious products were thought off, like chiwda made from sunflower seeds, protein bars, oats porridge, superseeds candy, etc. It was interesting plus lot of brain storming was done to develop products. It requires determination, patience and hard work. Out of these chiwda and superseeds candy was prepared and sensory evaluation was done. Based on people's acceptability and sensory evaluation scores 'superseeds candy' was finalized as a product to be made. Superseeds are beneficial if we include them in our daily diet as it helps to lower blood sugar, reduce cholesterol levels and have many more health benefits.

Materials

Ingredients used to prepare candies are pumpkin seeds, poppy seeds, muskmelon seeds, flax seeds and chia seeds, powdered sugar, lemon juice, black salt. All these products were procured from local market at reasonable rates.

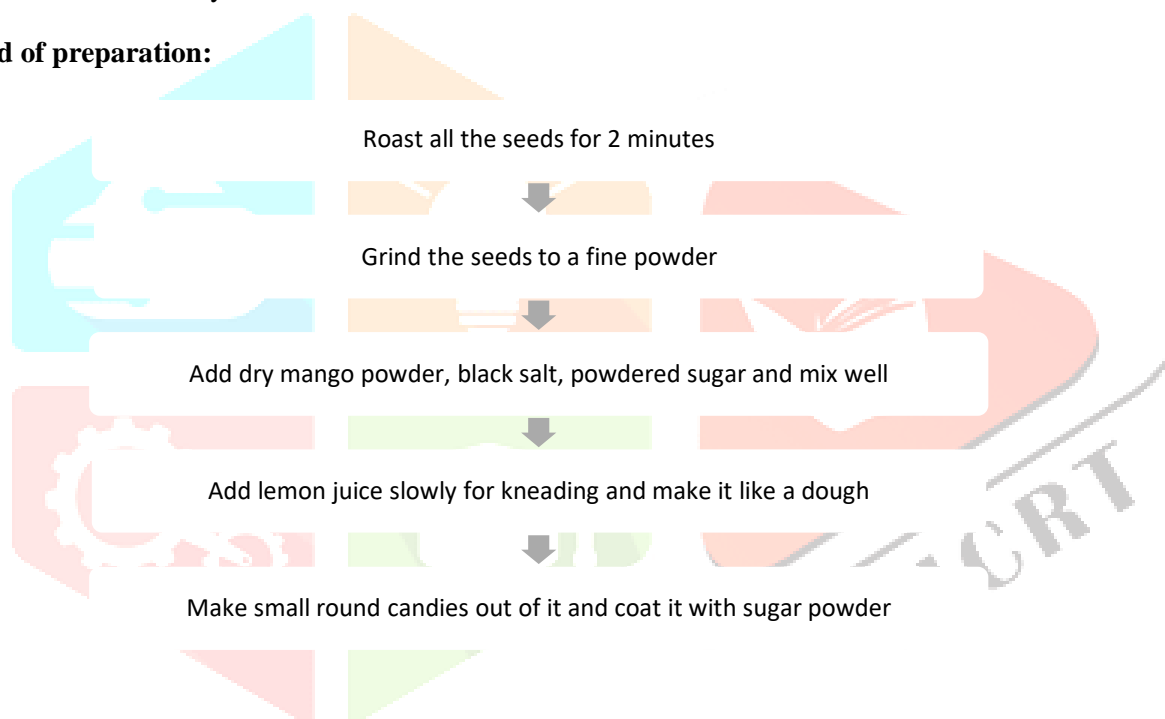
Standardization of products:

Table no. 1 (ingredients and amount for making of superseeds candies)

<i>Ingredient</i>	<i>Amount</i>
Pumpkin seeds	5gms
Flax seeds	5gms
Chia seeds	5gms
Poppy seeds	5gms
Muskmelon seeds	5gms
Powdered sugar	8tbsp
Dry mango powder	3tbsp
Black salt	1tbsp
Lemon juice	2tbsp (for kneading)

The result of the candies were good and accepted by people so there was no second trial as the candies were sweet and tangy, no bitterness of any seed was found.

Method of preparation:



Result of first sensory evaluation after standardization

Sensory evaluation was carried out with the help of 5 members and they were family members and neighbors due to covid 19 pandemic. Sensory evaluation was done with the help of hedonic scale which was ranged from dislike a lot, dislike a little, neither like nor dislike, like a little and like a lot which included characteristics like appearance, aroma, taste, texture, mouth feel.

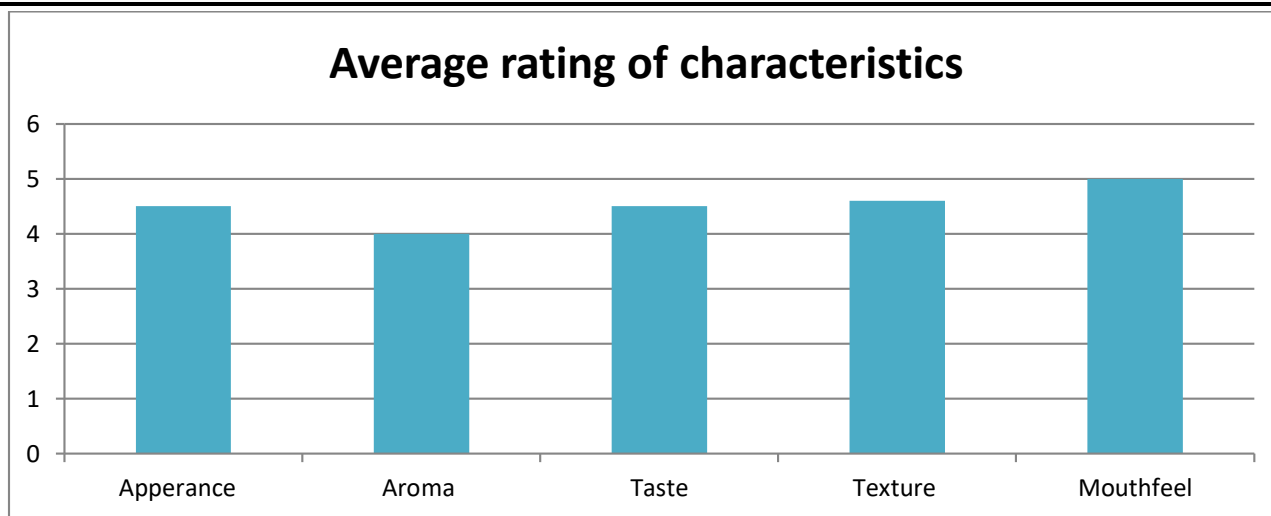


Figure no. 2 - result of sensory evaluation

Result of sensory evaluation after 4 weeks

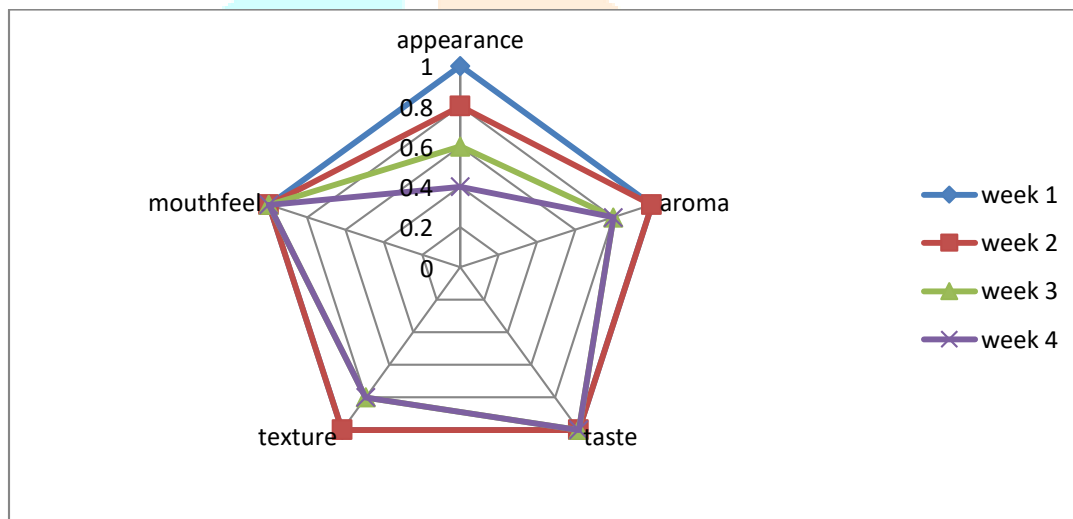


Figure no. 3 - result of sensory evaluation for 4 weeks

Rating characteristics:

There were no major changes seen in characteristics, there was only one change seen in appearance. The hedonic scale was from dislike a lot (0.2), dislike a little (0.4), neither like nor dislike (0.6), like a little (0.8), like a lot (1). During first week of sensory evaluation all characteristics like appearance, taste, texture, aroma, mouth feel were highly acceptable means they were liked a lot and liked a little but after 3 weeks the appearance was getting dull though the mouth feel and taste was same till last only the appearance had major changes. Also aroma and texture in 3rd and 4th feel was little less as compared to 1st and 2nd week. Seeing all these changes product was finally labeled as best before one month after packaging.

Nutritional label*Table no. 2(Nutritive value for 10gms)*

<i>Nutrients</i>	<i>Amount</i>
Energy	209kcal
Carbohydrates	21.8g
Protein	6g
Fiber	10g
Potassium	218mg
Total fat	14.4g

A nutritional label was designed for the product which included nutrients value, manufacturing date, net weight and vegetarian logo, ingredients. Nutritional label is added to attract the consumers and to acknowledge consumers what they are eating, how much nutrients they get by eating them, etc. Nutritional label is good aspect of marketing. A & B are the nutritional labels for front side and back side of the packaging material respectively.

Nutritional content

Nutrients	Amount
Energy	209kcal
Carbohydrates	21.8g
Protein	6g
Fiber	10g
Potassium	218mg
Total fat	14.4g

Ingredients: flax seeds, chia seeds, pumpkin seeds, muskmelon seeds, poppy seeds, dry mango powder, black salt, powdered sugar, lemon

NO PRESERVATIVES

Net Wt: 50g

Best before 30 days of packaging

*Figure no.4 - front label**Figure no.5 - back label***Packaging material**

Plastics are organic polymeric materials that can be molded into the desired shape. The lightness and versatility of these have been confirmed over decades in the processing and packaging of food. Plastic containers and packaging protect against the contamination of food and offer adequate mechanical strength. Due to a lower cost and lower energy consumption during manufacturing, plastics have replaced traditional packaging materials. In addition, they are able to preserve and protect the food for longer, minimizing the use of preservatives. In relation to the consumer, they are easy to handle and open, and offer an effective surface for printing labels or brands. These containers can be reused and recycled [6]. In each box 50gms of candies was served easily.



Figure no.6 - packaging material



Figure no.7 - 50gms of candies in box

Budgeting

Budgeting is the important aspect of entrepreneurship. All the ingredients including packaging material was bought from wholesale market.

Table no. 3 budget of superseeds candies

Ingredients	Price (Rs)
Flax seeds (100g)	20
Muskmelon seeds (100g)	100
Poppy seeds (100g)	200
Chia seeds (100g)	100
Pumpkin seeds (100g)	100
Dry mango powder (50g)	42
Sugar (1kg)	36
Lemon	10
Miscellaneous (electricity, rent, gas, travel, employer's wages)	100
Packaging material	150
Total	878

This 878rs is total cost which includes ingredients and packaging materials; per box price is 40rs/ 50g. If 50 boxes were to be sold, then the total cost will be 2,000rs out of which 1,122rs will be the profit.

Marketing

Marketing of the product was done online. A pamphlet which you can see in the picture (E) was posted on Facebook and whatsapp. This pamphlet was made on Canva app. Due to its high nutritional value and budget friendly people were attracted and the product was highly acceptable, many people were interested in buying it and because of this positive feedback I can make more innovative seeds candies which will be more beneficial to people.



Figure no. 8 - pamphlet for marketing

Conclusion

Seeds are rich in nutrients. Superseeds candies are highly nutritious contains good amounts of fiber, good fats, potassium, etc. This candy can be consumed by all age groups especially recommended to people having co-morbidities like cardiovascular diseases, bone diseases, hypertension, etc. This product also has a good shelf life till a month, all characteristics like taste, mouth feel, texture; aroma does not deteriorate and is safe for consumption. Instead of sugar jaggery or stevia can be used for people who have issues with sugar.

References

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