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STANDARDIZATION AND SHELF LIFE STUDY OF SOYA OATS CHOCOLATE BAR (NUTRI CHOCOLUSH)

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A shelf life study was done to standardize an innovative, nutritious product for consumer acceptance. A healthy yet tasty recipe was developed as in today's world; people want to eat healthy and tasty. The base ingredient used in the recipe was soya chunks along with oats, dates, pumpkin seeds, chia seeds, watermelon seeds, sunflower seeds, sabja seeds, rajgeera, sesame seeds, raisins, honey, cinnamon powder and dark chocolate to give variety to the product. Nutri Chocolush not only provides energy, protein, carbohydrates and fats, but also has high amount of iron, calcium, fibre and potassium. It also contains several phytochemicals belonging to the categories of alkaloids, flavonoids and palmitic, oleic and linoleic acids. Shelf life study including sensory evaluation was done by scoring test with a 7 point hedonic scale on attributes such as texture, taste, after taste, flavour, and overall acceptability. The other aspects covered in the shelf life study were packaging, labelling, budgeting and marketing.

Keywords: Shelf life, Nutri chocolush, Chocolate bar, PCOD, Standardization, Pumpkin seeds, Oats, Fibre

INTRODUCTION

Nutri Chocolush was finalized after a lot of deliberations for food product development which also involved products such as mushroom-soya sticks, soya-oats cookies, pancake mix, oats missal and dates halim laddoo. This project was a part of our under graduate syllabus in B.Sc. Food Science and Nutrition.

Objectives

1. To develop a food product for everyone and also can be eaten by women suffering with Polycystic Ovarian Disorder (PCOD).
2. To standardize a regular chocolate bar into a nutritious bar which might help in the reduction of the symptoms of PCOD and also iron deficiency.
3. To study the shelf life of Nutri Chocolush.

4. To study the packaging, marketing and budgeting aspects of the product.
5. To develop a nutrition label.

PCOD is the most common endocrine disorder of the reproductive tract. Biochemical abnormalities in the points with PCOD can lead to an increase in the testosterone and androgen levels, ratio of LH to FSH, Insulin level, insulin resistance and a decrease in the sex hormone binding globulin level. So to balance the ratio of the hormones, Nutri Chocolush was developed and standardized with an aim to target women suffering with PCOD. The main ingredients in the product were soybean and dates, along with other ingredients such as oats, pumpkin seeds, chia seeds, watermelon seeds, sunflower seeds, sabja seeds, til, rajgeera, raisins and cinnamon which have a lot of phytochemicals and functional groups make the product rich in nutraceuticals.

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Dates are rich in fibre, antioxidants, promote brain health and are a natural sweetener. It also contains potassium, iron, etc. It also has a low glycemic index (Campbell Miller *et al.*, 2002). Soybean contains good amount of protein, is low in saturated fats, cholesterol free, and lactose free and helps to secrete the hormone oestrogen in women which is necessary for women suffering with PCOD (Drane *et al.*, 1980). Oats contains good amount of β -glucans, insoluble fibre and total dietary fibre (Asp *et al.*, 1992). Pumpkin seeds contain various medicinal properties including anti-diabetic, anti-oxidant, anti-carcinogenic and anti-inflammatory properties (Mukesh Yadav *et al.*, 2010). The other ingredients in this product also contain several phytochemicals belonging to the categories of alkaloids, flavonoids and palmitic, oleic and linoleic acids.

As this product has nutrition and taste as chocolate is world-wide accepted product by all the generations it can be consumed by one and all, will add variety. A regular chocolate bar gives nothing but only calories but this bar is healthy as well as tasty. The ingredients used in this enriched chocolate product Nutri Chocolush has good amount of iron, proteins, calcium, potassium, energy, magnesium and fibre. It will also help in the production and maintenance of the hormone oestrogen. This bar is also helpful for menopausal women as during menopause or old age the oestrogen levels drop.

MATERIALS

After a brain storming session and discussing about all other products, we decided to make this product.

Chocolate is referred to as sweet, brown food preparation of roasted and ground cocoa seeds. If it can be made in the form of a liquid, paste or in a block or a flavouring ingredient in other foods. Other ingredients such as nuts, etc. may also be added to improve the taste as well as nutrition. Materials used to prepare this product was soybean (chunks), black dates, oats, pumpkin seeds, chia seeds, water melon seeds, sunflower seeds, sabja seeds, rajgeera, til, raisins, honey, dark chocolate and cinnamon powder. After conducting sensory evaluation and feedback given, amount of cinnamon was reduced as it gave a strong after taste.

After the first trial and sensory evaluation done by the student of our class, the amount of cinnamon powder was reduced as it gave a strong after taste. The ingredients in the table given below are according to the second trial in which amount of cinnamon powder was reduced to 1 tsp (in the first trial it was 2 tsp).

**Table 1: Ingredients and Amount to Prepare
30 g (1 bar)**

Ingredients	Amount (100 g) Excluding Dark Chocolate
Black dates	40 g
Soybean chunks	20 g
Oats	20 g
Pumpkin seeds	2 g
Chia seeds	2 g
Watermelon seeds	2 g
Sunflower seeds	2 g
Sabja seeds	2 g
Rajgeera	2 g
Til (sesame seeds)	2 g
Raisins	2 g
Honey	1 tbsp
Cinnamon	1 tsp
Dark Chocolate	10 g

METHODOLOGY

Roast the amount of oats and soy chunks as given in the above table



Grind them coarsely



Mix black dates + oats + soybean + pumpkin seeds + chia seeds + watermelon seeds + sunflower seeds + sabja seeds + rajgeera + sesame seeds + raisins together (amount as shown in the above table)



Add cinnamon powder and honey



Measure and put into molds coated with melted dark chocolate



Layer the top with chocolate



Let it set for half an hour in the freezer



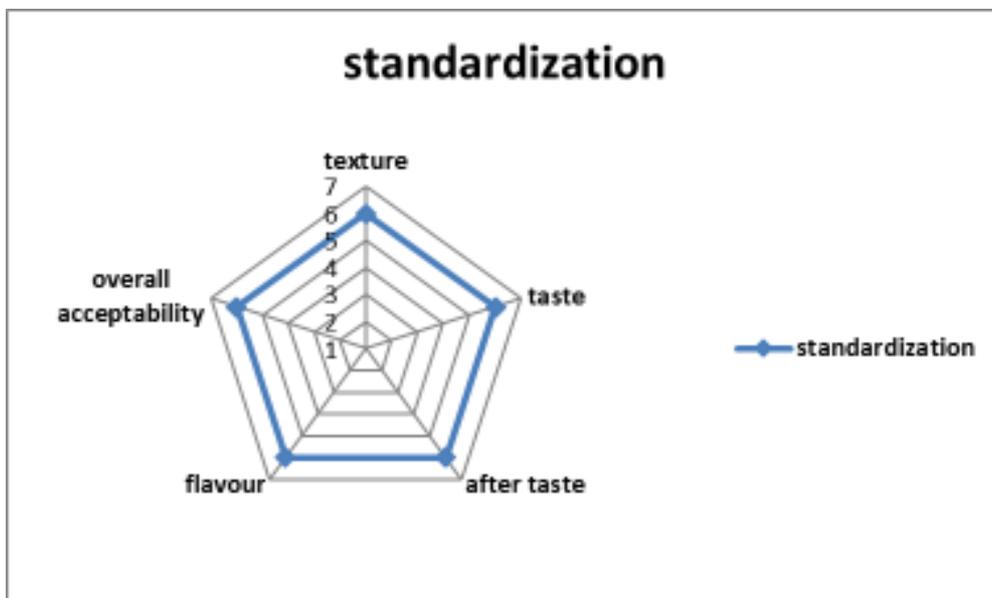
Remove the chocolates and pack them.

SENSORY EVALUATION RESULTS

In order to study the shelf life of the product sensory

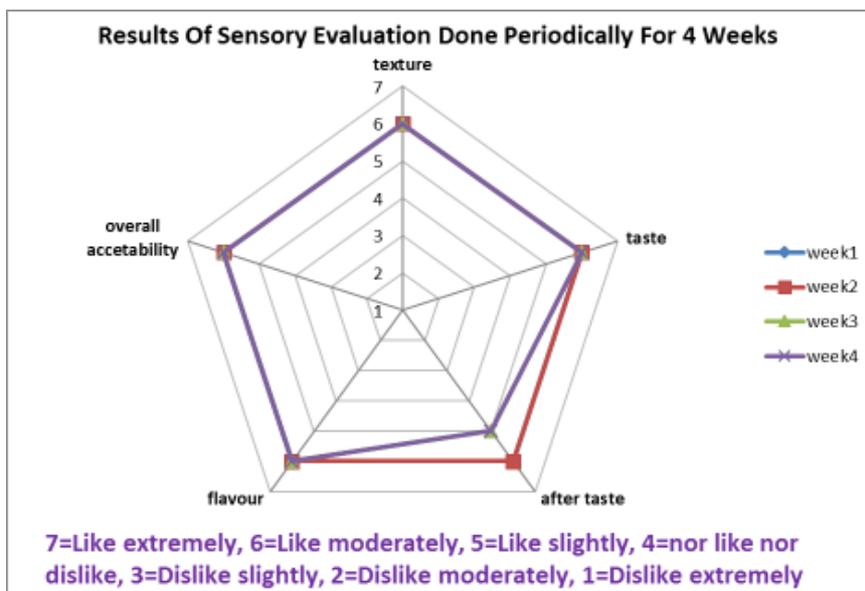
evaluation was done periodically for four weeks. After the first trial and sensory evaluation done, amount of cinnamon

Figure 1: Standardization



Note: As per Figure 1, the product was liked moderately by all the students who did the sensory evaluation after standardizing the product.

Figure 2: Results of Sensory Evaluation Done Periodically for 4 Weeks



Note: As per Digure 2, the product was liked by most of the students moderately in the first two weeks of sensory evaluation. In the 3rd and the 4th week, after taste characteristic was gone down as the product might have oxidised due to some ingredients. It might also have gone down because of the packaging material being in contact with the product.

was reduced a little bit as it gave a strong after taste. In second trial, amount of cinnamon was reduced, and sensory evaluation was done. Scoring test with a seven point rating scale was used. Characteristics evaluated were taste, texture, after taste, flavour and overall acceptability and were scored out of seven were 7=Like extremely, 6=Like moderately, 5=Like slightly, 4=not like nor dislike, 3=Dislike slightly, 2=Dislike moderately, 1=Dislike extremely. The result of evaluation is shown-

NUTRITION LABEL

Nutrition label helps the consumer in selection of food; it also describes the food’s nutrients and its content. It properly guides the consumer in selection of foods, along with this labelling regulation should provide incentives to manufacturers to develop products that helps in public health and also in following dietary recommendations (Van den Wijngaart *et al.*, 2002).

Here is the nutrition label developed for the given product:



Nutri Chocolush

For oestrogen rush!

Nutritional Information	(per 30 g)
Energy (kcal)	144
Protein (g)	5.6
Carbohydrates (g)	6.3
Fats (g)	15.1
Iron (mg)	2.1
Calcium (mg)	62.7
Fibre (g)	3.6
Potassium (mg)	230.9

Net weight: 30 g

- 100% Vegan
- 100% Organic
- No Added Preservatives
- No Added Colours

Or you can contact us on - 7045104925

7208173130

Ingredients

Dates, soya, oats, pumpkin seeds, chia seeds, watermelon seeds, sunflower seeds, sabja seeds, rajgeera, til, raisins, honey, cinnamon powder, dark chocolate.

MRP: Rs 30/-

MFD on: 7th March 2019

For complaints, queries or orders, email us on

sayali05ugale@gmail.com or

mrunalchavan59@gmail.com

Best before 2 months from Manufacturing

A nutrition label was designed for Nutri Chocolush. Information like NET Wt, Date, Veg status, Major Nutrients and Contact information were added.

Figure 3: The Final Product



Figure 4: Nutritional Label and Other Details Such as Price, Date of Manufacture, Date of Expiry and Contact Details



PACKAGING MATERIAL

Packaging material used was butter paper with plastic coating on one side. Along with the butter paper aluminium foil was also used in order to wrap the chocolate properly. As aluminium foil helps to keep the food fresh, it also provides a complete barrier to light, oxygen, moisture and bacteria.

BUDGETING AND MARKETING

Budgeting helped us to improve upon the next product sales in terms of feedback collected from the target population about the pricing and other aspects of sales. Budgeting also helps the consumer and the seller in many financial ways. For the bulk production ingredients for Nutri

Figure 5: Aluminium Foil Used for Primary Wrapping of the Product



Figure 6: Butter Paper with One Side Plastic Coating to Wrap the Final Product



Table 2: List of Ingredients and their Cost (for 36 Bars)

Ingredients	Cost (Rs)
Dates (500 g)	125/-
Soy chunks (200 g)	22/-
Oats (200 g)	40/-
Pumpkin seeds (50 g)	60/-
Chia seeds (50 g)	60/-
Watermelon seeds (50 g)	20/-
Sunflower seeds (50 g)	20/-
Sabja seeds (50 g)	10/-
Rajgeera (100 g)	20/-
sesame seeds (50 g)	15/-
Raisins (100 g)	40/-
Honey (100 g)	57/-
Cinnamon powder (50 g)	25/-
Dark chocolate (400 g)	80/-
Total	594/-

Chocolush has been brought from the wholesale market to increase the profit.

Cost calculation for the ingredients of 36 Nutri Chocolush bars is as given below:

Foil paper=Rs.90/-

Outer packing=Rs.90/-

Electricity=Rs.5/-

Gas=Rs.5/-

Travelling=Rs.5/-

36 bars (each pack containing 1 bar) was prepared and sold at Rs.35/- each (total Rs.1260/-). The profit made was Rs.504/- for 36 bars (Profit per packet Rs.14/-). The bars were displayed in the college campus and the staff and students of both the colleges (MMP Shah and Dr. BMN college of Home Science) bought our products.

CONCLUSION

A nutritious product was successfully developed, standardized and marketed. The shelf life was seen to be for

60 days. The Nutri Chokolush bar was accepted because of its taste, chewiness and loved by every age group. The sale was good and can be proved to be a profitable start up. This project enhanced entrepreneurship skills. The Nutri Chokolush bar can thus be a successful project.

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