



SHELF-LIFE STUDY OF A BABY FOOD POWDER

¹Saloni Chheda, ²Anuradha Shekhar

¹ Department of Food Science and Nutrition

¹Dr. B.M.N. College of Home Science, Matunga, Mumbai

Abstract: An attempt was made to design a baby food powder for babies between six months to two-year-of age. This can be used as an infant weaning mix formula. The food powder was made from sprouted moong, sprouted black chickpea, sprouted chickpea, Nachni, makhana, oats and Daliya. It can be made into a sweet porridge or a savoury item for babies. The food powder provided good amount of protein, carbohydrate, calories, calcium and fibre. The shelf-life study was done using a scoring test on a hedonic scale and the attributes scored were appearance, taste, aroma, color and consistency. It also included nutritional labelling, costing and packaging of the product. The product was marketed using social media.

Index Terms - Baby food, Sheera, nutritious, powder, infant formula

INTRODUCTION

Baby food is any soft, easily consumed food other than breastmilk or infant weaning mix formula that is made specifically for human babies between four and six months and two years of age. The food comes in many varieties and flavors that are purchased ready-made from producers, or it may be table food eaten by the family that has been mashed or otherwise broken down.(4) Pediatrician always suggests breast milk is the best source of nutrition for babies during the first 6 months, but formula can be a good alternative after this period .(1) Different nutrients needed for the baby to grow and stay healthy include, calcium, fats, folate, iron, protein, zinc, vitamin A, vitamin B1, B2, B3, B6, B12, vitamin C, vitamin D, Vitamin E and vitamin K.(2) Keeping all this in consideration, the baby food powder was made. The ingredients included were sprouted moong, sprouted black chickpea, sprouted chickpea, Nachni, makhana, oats and Daliya. The ingredients are rich in fibre, protein, carbohydrates. This powder can be used as formula for babies. Sheera can be made from the powder, by adding dates to make it sweet instead of sugar. Chilla can also be made from the powder, by adding veggies. But this paper primarily focuses on baby food powder and the following were the objectives of the study.

1. To standardize and innovate a food product.
2. To find a good packaging material for the product.
3. To mention proper labelling about the product.
4. To do marketing of the food product.
5. To check the shelf life of the product.

METHODOLOGY

An innovative food powder was conceived and planned after brainstorming on different product preparations, because it is rich in protein and other nutrients. As breast milk is the best source of nutrition, but weaning mix formula can be a good alternative as in their growing years, protein is must for proper growth with all other nutrients included. So, this baby powder was formulated which was made from all basic but nutritious ingredients.

In our undergraduate program, an innovative food product was supposed to be designed, so initially, it was thought to include millets to make it more nutritious, but due to the pandemic it was difficult to procure millets and also it was a little costly which may be a hurdle while selling the product, so the present project included cereals, pulses, oats, makhana.

MATERIALS

The baby food powder was confirmed after 2 trials. The sensory evaluation was done for the first trial which was done among 6 naïve panel members. The score card consists of 5 points hedonic scale ranging from liked a lot to dislike a lot. Attributes that were scored were appearance, taste, aroma, colour and consistency. During the first trial, the results of sensory evaluation showed that the Sheera- sweet porridge, did not have pleasant taste as shown in fig 1. The feedback of the panellist observed slightly burnt taste in the Sheera.

So, the 2nd trial was done to improve the taste by roasting the raw ingredients a little less than earlier. So, this resulted in better taste as shown in fig 2. Receiving positive feedback from panellist, this product was finalized. This food powder was packed in zip lock polythene bag and kept at normal room temperature for further shelf-life study.

Table 1. Ingredients and their amounts

Ingredients	Amount (gms)
Sprouted Moong	15 gms
Sprouted black chickpea	10 gms
Sprouted Chickpea	10 gms
Nachni	10 gms
Makhana	10 gms
Oats	10 gms
Dalia	10 gms



Fig 1. Result of sensory evaluation for the first trial.

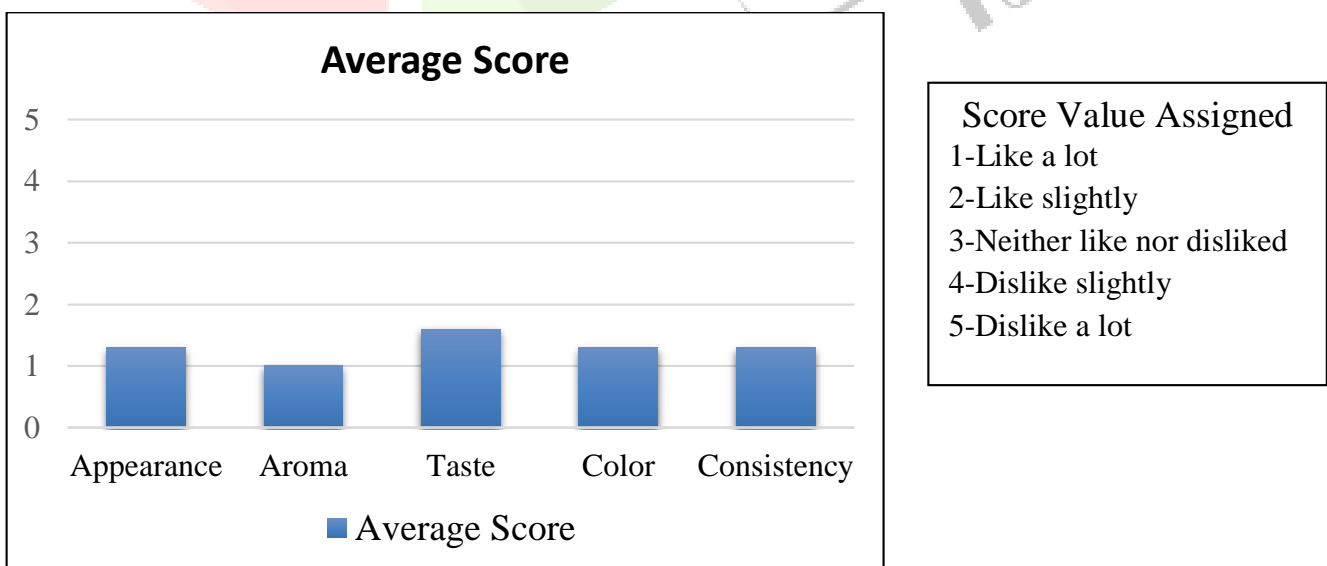


Fig 2. Result for sensory evaluation for 2nd trial

METHODOLOGY FOR PREPARATION OF THE BABY FOOD POWDER

1. Firstly, for sprouted moong, black chickpeas and chickpeas, it has to be soaked in water for approximately 8 hours. Later on, we have to put them in a cloth and keep them for overnight. Next day there will be sprouts on them and they will be ready for the next step.



2. Secondly, take all the ingredients in different plates and sun dry them until they get dried.



3. Thirdly, dry roast all the ingredients separately on slow flame for approximately 15 mins. This is very important step and should be done properly as it will play a significant role in taste of the product made i.e Sheera.



4. Further, we have to grind them in a mixture and make 4 different powders.

- I. Make powder of all the sprouts together and keep it aside
- II. Make powder of Nachni and keep it aside
- III. Make powder of makhana and oats together and keep it aside.
- IV. Make powder of Dalia separately and keep it aside.



Pulses powder



Oats and makhana powder



Nachni and Daliya powder

5. Later on, mix all the 4 powders together and we can store this powder at this point for further use.

PACKAGING

Packaging, the technology and art of preparing a commodity for convenient transport, storage, and sale. Packaging means the wrapping or bottling of products to make them safe from damages during transportation and storage. It keeps a product safe and marketable and helps in identifying, describing, and promoting the product. (3) The packaging material used here is high density polyethylene Ziplock plastic bags as shown in fig 3. Plastic packaging is an extremely light-weight storage option that doesn't require a lot of storage space either. Plastic packaging can survive extreme environments and don't easily degrade in hot and cold temperatures, thus preserving the integrity of the food inside it. It also protects your products from moisture, oxygen, dust, light and odors. The plastic food packaging is cost effective and beneficial to small-scale product manufacturers. As shown in fig 4., 250g was packed in one bag. It should be stored at room temperature for one month and then can be stored in refrigerator.



Figure 3.



Figure 4.

NUTRITIONAL LABELLING

Nutrition labels are often displayed on the back side of the packaging. An interdisciplinary meta-analysis was conducted on Consumer effects of front-of-package nutrition labelling. Food labelling is the primary means of communication between the producer, seller and consumer of food. (6) The purpose of nutrition labelling is to provide basic information, for marketing and advertising and for health and nutritional safety. The label contains information like manufacturing date, date of expiry, nutritional facts. It also makes consumers aware about what all ingredients it contains. Now a days people are more concerned about what all nutrients a particular product contains. A nutritional label was designed for baby food powder which consisted of ingredients, nutritive table, manufacturing date, expiry date, net weight, vegetarian symbol as shown in fig 5.

Baby Food Powder

- No preservatives added
- Ease digestion
- No colour or flavour added

250g

Ingredients- sprouted moong, sprouted black chickpea, sprouted chickpea, Nachni, makhana, oats and Dalia.

Nutritive value per serving i.e (20gms)

Nutrients	Amount
Energy	213 k.cal.
Protein	3.59 gms
Carbohydrates	13.86 gms
Fats	0.71 gms
Calcium	25.95 mg
Fibre	3.31 gms

<https://www.nutritionvalue.org/> MRP- 100/-

Best at room temperature for 1 month.
Later can be stored in refrigerator.

Manufacture by Saloni Chheda
Email id. Saloni.b.Chheda@gmail.com

Mfg. dt. 10th May 2021

Figure 5.

BUDGETING

Budgeting is the most important aspect in product development. It should be affordable by everyone. It should be neither costly nor cheap. One should also see to it that quality should not deteriorate while budgeting. It includes cost of raw ingredients, packaging material, labelling cost and miscellaneous which includes electricity, gas, salary of the employee, rent, travelling expense etc. as shown

Table 2. Budget of baby food powder

Expenditure	Price
Raw ingredients	60
Packaging material	5
Labelling	10
Miscellaneous (Electricity, gas, salary of the employee, rent, travelling expense)	25
Total	100

The cost of the baby food powder for 250g was 100 Rs. If 100 packages were sold the total amount collected was Rs. 10,000/- and from that Rs 3000/- was profit collected as all the material was bought in bulk so it costed less that the retail price.

SHELF-LIFE STUDY FOR 4 CONSECUTIVE WEEKS

To study the shelf-life study of baby food powder, sensory evaluation was conducted for 4 consecutive weeks which was done by 6 naïve panel members. The score card contains of 5 points hedonic scale ranging from like a lot to dislike a lot. Attributes that were scored were appearance, taste, aroma, color and consistency.

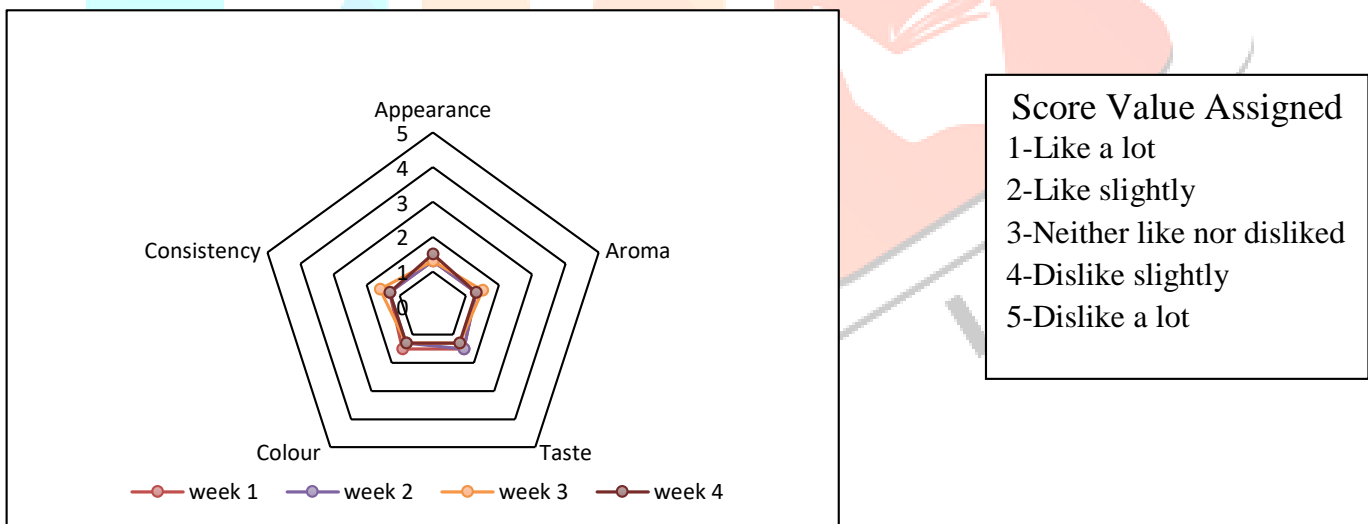


Figure 6. Sensory evaluation for 4 weeks

Sheera was made from the food powder for 4 consecutive weeks and sensory evaluation was done on 6 naïve panel members. As shown in fig 6,

- In week 1, ratings for all the characteristics were between 1 to 2 that is like a lot to like slightly but the taste and colour was a little declined but the product was acceptable.
- In week 2, ratings for all the characteristics were between like a lot to like slightly that in from 1-2 but there was a little decline in taste as compared to other characteristics.
- In week 3, aroma and consistency were a little declined but ratings for all the characteristics were in between 1 to 2 that is like a lot to slightly liked.
- In week 4, all the characteristics were rated in between 1 to 2 that is like a lot to like slightly but appearance was slightly declined. But the product was definitely accepted.

MARKETING

Marketing is also one of the important elements while developing a product. The photo of the baby food powder with the nutritional labelling was posted on social media like Facebook, Instagram and on WhatsApp group. Reaction of the people was recorded and there was a positive feedback.

SUMMARY

Baby food powder is a nutritious food powder recommended for babies from age group of 6 months to 2 years. It provides a good amount of protein, fibre, The shelf life of the product was quite impressive because it lasted for one month and if stored properly it can last long as none of the characteristics deteriorated. It also got a positive feedback when marketed. Further study can be done by adding millets to it and making it more nutritious and cost effective.

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