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Development of a Protein-Rich Premix “Health-o-Fit Basundi Mix”

ABSTRACT

The increasing demand, craze of muscle building and the market related to protein supplements is seeking a lot of profit and is growing at a very fast rate. In India, gyms are opening across the country in both small and big cities, thus serving as main promoters of Sports nutrition products/ Protein supplements for a typical consumer being someone that wants to build muscles and aid recovery after a serious workout. Keeping that in mind, the idea of having something as delicious as basundi is always appealing and added to it the nutrition factor will just make it more desirable. A premix for Basundi rich in protein and high amount of fiber was developed for general population except diabetic people. Effects of the ingredient incorporation on the nutritional composition and sensory qualities were evaluated. The product with more consumer acceptability was analyzed for various parameters like protein, calcium, energy, fat, carbohydrate, moisture, ash, and essential amino acids. Addition of powdered oats, dried fruits and pumpkin seeds improved the nutritional composition and made it acceptable for wide range of consumer groups. The premix was analyzed for its physical, biochemical and sensory properties. Proximate analysis was carried out and the results obtained were Energy (397.38 kcal), Ash content (3.48%), Moisture content (3.52%), Carbohydrate content (67.9g), Protein content (25.1g), Fibre content (8.6g) and Fat content (2.82g). Organoleptic analysis including sensory attribute like color, odour, appearance, texture and taste was carried out to check the overall acceptability of the product. Microbiological testing and shelf life studies were also carried out and suitable packaging for the product was also identified. Health-O-Fit Basundi Mix is healthy and a good source of protein, fibre and energy. Also effective in terms of nutritional quality, without compromising on the taste of the basundi premix available locally.

Keywords: Premix, Basundi, Protein rich, Pumpkin seeds, Powdered Oats

1. INTRODUCTION

Functional food may include such items as cereals, bread, beverages, that are fortified with vitamins, some herbs and nutraceuticals. Dietary supplement is a product taken orally that contains one or more ingredients such as vitamins or amino acids that are intended to supplement one's diet and are not considered food. [1]

Our objective was to develop a protein rich product with good amount of fibre and to carry out the proximate analysis, microbial analysis, sensory analysis, packaging, labeling and shelf life studies of the product due to the craze of muscle building, market demand, deliciousness of health and could be competitive. [10]

Protein is the major source of energy, which maintains body tissue, including development and repair. Fibre is a type of carbohydrate that helps to keep our digestive system healthy. The product is easy to make and can be consumed by any group of population above the age of 3 years. We are mainly targeting aged people, as presently the availability of products targeting aged people is quite lesser than the products targeting for kids and adults. As after the age of 50, the number of taste buds decreases and they begin to lose the ability to distinguish between the tastes. So our product is healthy and tasty choice for them to help fulfill their protein and fibre requirements. [2] [13]

Skimmed Milk Powder, added to Fortify Blended Foods (FBF) used for malnourished infants and young children or people living with HIV or AIDS.

Oats powder contains a powerful soluble fiber called Beta-Glucan, helps to lower cholesterol levels and protect LDL cholesterol from damage. It helps to prevent diabetes. [7]

Pumpkin seeds powder prevents kidney stones and Limits Parasitic Activity, boosts metabolism, treats arthritis, reduces inflammation and contains high amount of magnesium and zinc. [5] [6]

Almonds contain lots of healthy fats, fiber, protein, magnesium and vitamin E. It lowers blood sugar levels, reduces blood pressure and lower cholesterol levels. They can also reduce hunger and promote weight loss. [4]

Cashews are rich in selenium, zinc, magnesium, and iron and phosphorous. Great source of phytochemicals, proteins and antioxidants. Works as a cancer chemo preventive agent and reduces the risk of anemia and prevents gallstones. Pistachios contain the highest levels of potassium, vitamin K, phytosterols and xanthophylls carotenoids. Promote heart-healthy blood lipid profiles. Acts as a good source of dietary fiber. [3]

Cardamom powder aids in treating depression, some heart disorders, dysentery and diarrhea. Potential applications as an antimicrobial, antibacterial and antioxidant. Alleviates joint pain and helps in body detoxification. [9]

Saffron, the biological activity of its constituents alleviate or prevent such health problems as gastric disorders, cardiovascular disease, insulin resistance, depression, premenstrual syndrome, insomnia and anxiety. [8]

2. METHODOLOGIES

2.1 Materials

Table 1: List of Ingredients

Ingredients	Amount in (Grams)
Skimmed Milk Powder	40
S85XF Protein	10
Powdered sugar	25
Dry fruit powder	8
Oats Powder	6
Ground nuts (Almonds, Cashews, Pistachios)	2
Corn starch	5
Saffron almond flavor	1.5
Pumpkin seeds powder	1
Cardamom powder	1
Saffron	1

2.2 Method

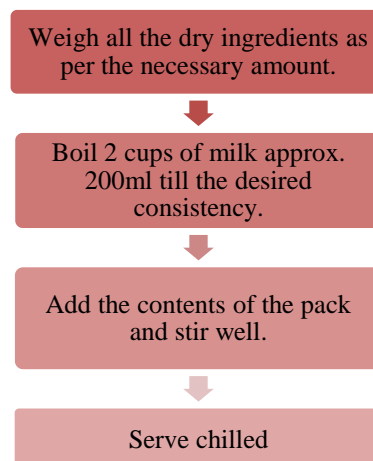


Fig. 1: A flowchart depicting standard method of preparation

3. PRODUCT FORMULATION TRIALS



Fig. 2: Health-O-Fit Basundi Mix (Premix)



Fig. 3: Basundi

4. PROXIMATE EVALUATION OF THE PRODUCT

Using different methods carried out proximate analysis of the product. [17]

4.1 Evaluation of Moisture Content

Using Oven Drying Method i.e. the conventional method evaluated moisture content of the product. The sample was weighed and treated at 100°C for 3 hours in the Hot Air Oven. [11]

4.2 Evaluation of Ash Content

Ash content of the product was evaluated by using Muffle Furnace. The sample was weighed and incinerated to remove the carbon molecules from the product and ignited at 550 °C in the muffle furnace. [11]

4.3 Evaluation of Fat Content

Fat content of the product was evaluated by using the Soxhlet method. Crude fat was determined using the Soxhlet extractor and Petroleum ether as a solvent. Method described in A.O.A.C Manual.

4.4 Evaluation of Protein Content

The protein content of the product was evaluated by using Biuret method. Method described in A.O.A.C Manual. [13]

4.5 Evaluation of Carbohydrate Content

Carbohydrates content was determined by using weight difference method subtracting the sum of the values of moisture, protein, fat and ash from 100.

4.6 Evaluation of Energy Content

Energy content was determined by multiplying the crude proteins, crude carbohydrates and crude fats by water factors 4, 4 and 9 respectively.

4.7 Evaluation of Crude Fiber

Crude fiber was evaluated by acid-alkali hydrolysis method. Method described in A.O.A.C Manual.

5. MICROBIAL EVALUATION OF THE PRODUCT

Using Total Plate Count Method did the determination of microbial count. The samples were prepared using serial dilution method. The sample was spread on Nutrient agar plate and Sabouraud's agar plate for the bacterial count and fungal count respectively. [15]

6. SENSORY EVALUATION OF THE PRODUCT

Using a 09- Point Hedonic Scale for various parameters such as appearance, odor, color, taste, consistency and its overall acceptability using 30 untrained panelists did the sensory evaluation of the product. [12]

7. SHELF LIFE STUDIES OF THE PRODUCT

The shelf life study was carried out at refrigerated conditions and room temperature.

8. RESULTS

8.1 Evaluation of Proximate Analysis

Table 2: Result of proximate analysis

Parameters	Results (per 100g)
Energy	397.38 Kcal
Carbohydrate	67.9%
Protein	25.1%
Moisture	3.52%
Ash	3.48%
Fat	2.82%
Crude Fiber	8.6%

8.2 Evaluation of Microbial Analysis

The microbial load of the sample on both the Nutrient Agar and Sabouraud's Agar was found to be less than 30 CFU/ml.

8.3 Evaluation of Sensory Analysis

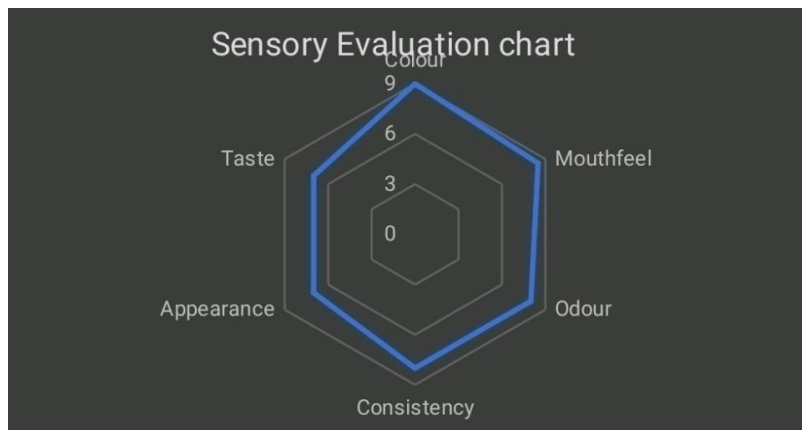


Fig. 4: Sensory evaluation result (Radar diagram)

8.4 Shelf Life Study

The product was at its optimum quality for 31 days at both at room temperature and refrigerated condition. Thus, it is concluded that the shelf life of the product is 'Best before 1 month from the date of manufacture' when store in clean, cool and dry place in packaged form.

9. FOOD LABELLING AND PACKAGING

9.1 Packaging Material

Aluminium standing pouches were used for product packaging. Aluminium pouches are sturdy and offer maximum resistant to dust, oxygen, chemicals, water, moisture and other agents that tend to destroy the quality of stored products. Its barrier function against the migration of moisture, oxygen and other gases and volatile aroma as well as against the impact of light is generally higher than any plastic laminate material. Aluminium pouches offer lightweight packaging and thus are travel friendly. Moreover, they come with a bottom gusset and occupy less storage space.



Fig. 5: Aluminium pouches

9.2 Labeling

A product label is the only way of communicating with each and every consumer. Certain information is mandatory on food label as per the regulatory requirement of the country. As per labeling norms in India (FSSAI FSSR) and globally, a food label should include the following key features:

- Name of the food product
- List of ingredients
- Nutritional information
- Specific claims
- Net weight or volume
- Batch or lot identification
- Manufacturing date
- Best before date
- Cost of the product (inclusive of taxes)
- Storage conditions
- Directions to use
- Veg or Non-Veg logo
- FSSAI logo
- Name and address of manufacturer
- Warnings, allergen information [14]

Label for 'Health-O-Fit Basundi Mix' was done as per the requirements specified in FSSAI and FSSR.



Fig. 6: Front Label

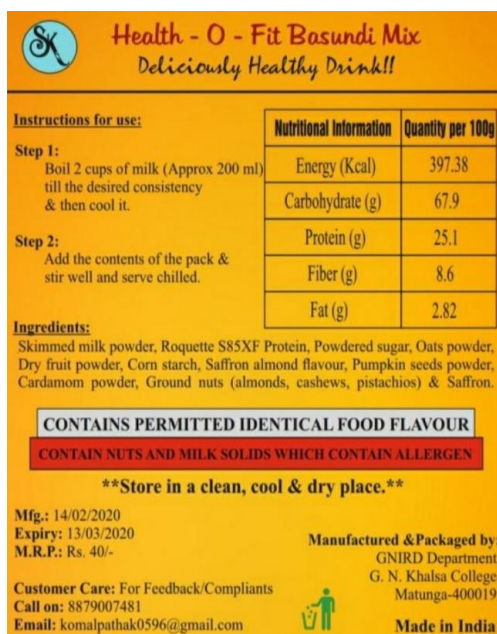


Fig. 7: Back Label

10. CONCLUSION

The protein rich product was formulated and analyzed. The premix also contains a good amount of fiber. The product was liked very much by all the participants (score-8). The Health-O-Fit Basundi Mix portrays a highly nutritious product along with its proposed ability to build muscles, which can be easily prepared and taken as a delicious basundi. Pumpkin seeds and Oats powder were the key ingredients for the preparation of Basundi Mix. So, Health-O-Fit Basundi Mix is completely healthy, vegetarian and a rich source of protein (25.1%), fiber (8.6%) and carbohydrate (67.9%) as compared to other available brands.

11. FUTURE PROSPECTS

Dietary fibre can be evaluated; Chromatographic Techniques such as TLC/HPTLC can be performed to find out the presence of phytochemicals and its amount in the product. Also, amino acid profiling of ingredients can be carried out. The product can also be launched in the market.

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