



“8 TO 80” HEALTH MIX – FORMULATION, STANDARDIZATION AND SHELF LIFE STUDY

¹Vrushali Tari,²Anuradha Shekhar,

¹Department of Food Science and Nutrition

¹Dr. BMN College of Home Science, Matunga, Mumbai

Abstract: A health mix was designed and standardized which can be added in milk, or prepared by adding in other recipes and consumed. It is a healthy option and is totally free of chemicals or preservatives. It contains all natural and traditionally used ingredients like ragi [finger millet], dry fruits, dates and many more. The product was found to be giving fairly good amounts of energy, protein, calcium. The shelf life study was done for 4 weeks with the help of scoring method on hedonic scale and characteristics were taste, color, sweetness, consistency and mouth feel(after taste).The other aspects studied were labeling, packaging, budgeting and marketing.

Index Terms - shelf life, health mix, ragi finger millet

I. INTRODUCTION

In today's world the awareness about health and fitness along with nutrition has increased a lot. But still the awareness about the building blocks of life that is protein is not known to a large extent. There are many reports which indicate that the majority of the Indian population are not aware of their ideal daily protein intake requirements. According to a source there is decline in the consumption of protein[L1]. About 73% of Indian are protein deficient today(L1).

It is an essential macronutrient in any person's diet and is required by all age groups. People mainly children do not get enough protein in their diet because of food availability and cost. This situation is all across the globe[1]. It is also considered as expensive component of diet and forms an important part of any balanced diet. Proteins are derived from plant source as well as animal source, and meat and cereals are considered the most important sources of protein across the globe[2].

Protein is essential for growth and maintenance of muscle mass and protein deficiency is a critical cause[3]. The deficiencies of protein are classified into marasmus, due to deficiency of energy and protein both and kwashiorkor, which is characterized by edema and the deficiency of protein quality as well as quantity. The deficiencies due to low intake or imbalance of amino acid intake may result in reduced growth in children and also loss of lean mass in adults. This results in increased risk of disease and other problems[4].

Ragi is rich in micro as well as macro nutrients along with phyto-chemicals and is therefore considered as a nutriceal. It is rich in protein, fat, minerals and also dietary fiber than rice. It is easy to digest and also non acid forming. It is minimally allergic. It also contains crude fiber and phosphorus in good amounts [5]. Ragi also has best quality of protein and also essential amino acids, vitamin A, vitamin B and phosphorus(Gopalan et al;2004). Ragi can be a good source of protein for growing children, pregnant ladies, old age people and also patients[6].

So the powder which is being made which is named as the '8 to 80 powder' contains essential nutrients and healthy ingredients like finger millet(ragi), dates, dry fruits(almonds, cashewnuts, pistachio), basil seeds(sabja seeds), poppy seeds, jaggery and ghee. All are natural ingredients which are consumed in Indian traditional diets and have no added preservatives. Also the mix is tasty as well as healthy.

Objectives –

1. To design a nutritious and healthy product.
2. To standardize a nutritious mix.
3. To study the shelf life of the product.
4. To design a nutritional label.
5. To make the packaging as effective as possible.
6. To learn the budgeting and marketing aspects

II. METHODOLOGY AND MATERIALS

As a part of the undergraduate program in Food Science and Nutrition a project on the formulation of a healthy product was undertaken. A lot of products were thought of, for eg kokum bar , ragi laddoo. But because of the pandemic situation it was difficult to get the ingredients needed for kokum bar and the ragi laddoo was very common snack consumed . So the idea was dropped. Then this mix was thought of which was made from the traditional ingredients which were available easily and were also very nutritious. This “8 to 80 mix” was made and it was rich in energy, proteins, calcium along with other nutrients.

Ingredients used were – Ragi, dry fruits which includes almonds, cashewnuts, pistachio, dates, basil seeds(sabja seeds), poppy seeds, jaggery and ghee.

table 1 – ingredients and amounts

Sr.no.	Ingredients	Amounts
1.	Ragi(finger millet)	100 gms
2.	Dry fruits(almonds, cashewnuts, pistachio)	75 gms
3.	Dates	50 gms
4.	Jaggery	50gms
5.	Basil seeds(Sabja seeds)	15gms
6.	Poppy seeds	15 gms
7.	Cardamom	5 gms
8.	Ghee	5gms

Methods of preparation:

Preparation of Ragi powder-

Soak the ragi(finger millet) grains in water overnight and wash it properly.

Sprout the ragi(finger millet) grains. Take a clean white cloth and tie the grains in it. And keep it for 12-14 hours. Tiny sprouts can be seen.

Sun dry the ragi (finger millet)sprouts. It will take almost 12 hours.

Transfer the ragi(finger millet) sprouts in a pan and dry the grains in case any moisture is left for 5 minutes.

Grind the grains after cooling and sieve the powdered ragi.(finger millet)

Before adding all the other ingredients required for the mix. Take the powdered ragi (finger millet) and roast in 5 gms of ghee.

Preparation of dry fruits powder.

- Take 75gms of almonds, cashewnuts, pistachio. All the 3 should be approx. same amount.
- Roast the dry fruits in the same pan which was used for roasting the powdered ragi.
- Grind the dry fruits in to a powder form after cooling.

Preparation of dates-

- Take 50 gms of dates and remove the seeds from them.
- Grind the dates in the mixer. It should not be fully grinded. Only it should be cut in small pieces.

Preparation of the mix-

- Take a bowl and mix all the ingredients that is ragi powder, dry fruits powder and the graded dates in it.
- Take organic jaggery and grate it using a grater. And mix it with other ingredients.
- Then add 25 gms of basil seeds(sabja seeds) and poppy seeds(khaskhas) in it.
- Add cardamom about 5gms. Cardamom is added only for the aroma when the mix is added in the milk so that it can give a nice aroma.

III. RESULT OF THE SENSORY EVALUATION

The product was finalized after the first trial. It was done with the help of scoring method. It was done on 6 naive panel members. Two teaspoon of the mix was added in one glass of warm milk and the panelist were told to check the sensory characteristics. The attributes tested were taste, colour, consistency, sweetness, mouth feel or after taste.

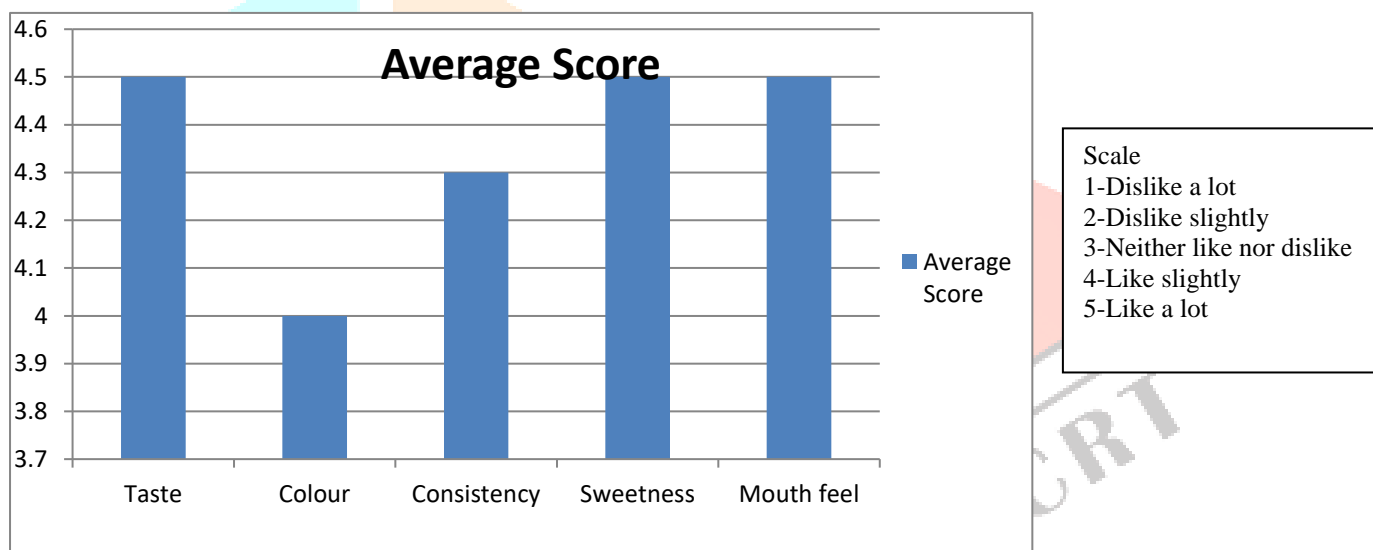


figure 1 – sensory evaluation of “8 to 80 health mix”

As shown in the fig 1 – all the attributes like taste, colour, consistency, sweetness and mouth feel were accepted by the panelist and were given scores between 4 and 5. And the average indicated that the product was between 4 to 4.5 which was acceptable. And so the product was packed in a packet made of polypropylene bag and was kept for shelf life check for 4 weeks.

IV. PACKAGING

Packaging of the food product is very important to protect it from contamination and other factors like odors, shocks, dust, temperature, physical damage, light, micro organisms and humidity. It is a key to ensure the quality and safety of food product and also extending the shelf life and also reducing the food losses and wastage. Packaging helps to protect the food from external factors so the type of packaging chosen is very important for enhancing food quality and safety and also increasing the shelf life. It makes the product attractive, economical and convenient for the consumers [7]. The packaging material used for this product is a polypropylene bag that is the P.P. Bags which are above 51 microns. These bags can be used to store food products to increase the shelf life for retail sale. These types of bags also display excellent chemical resistance and strength. These bags are also FDA approved(L2).



figure 2- packaging material



figure 3 – health mix

V. LABELLING

The nutrition label is made to guide the consumers in food product selection and mainly describes the nutrient content of the product. The information provided on the label should not mislead the consumers and must be true [8]. The Food and Drug Administration requires the food label on the packaged product. The nutrition label provides information about the food's nutrient content like the amount of energy, protein and other nutrients(L3). So a nutritional label was made considering the nutrients like energy, protein and fiber.

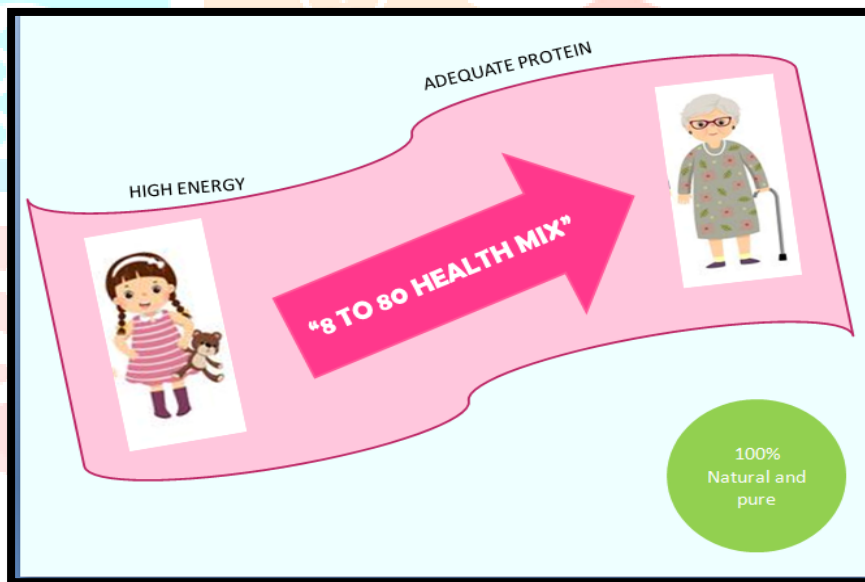


figure 4- front label of the mix

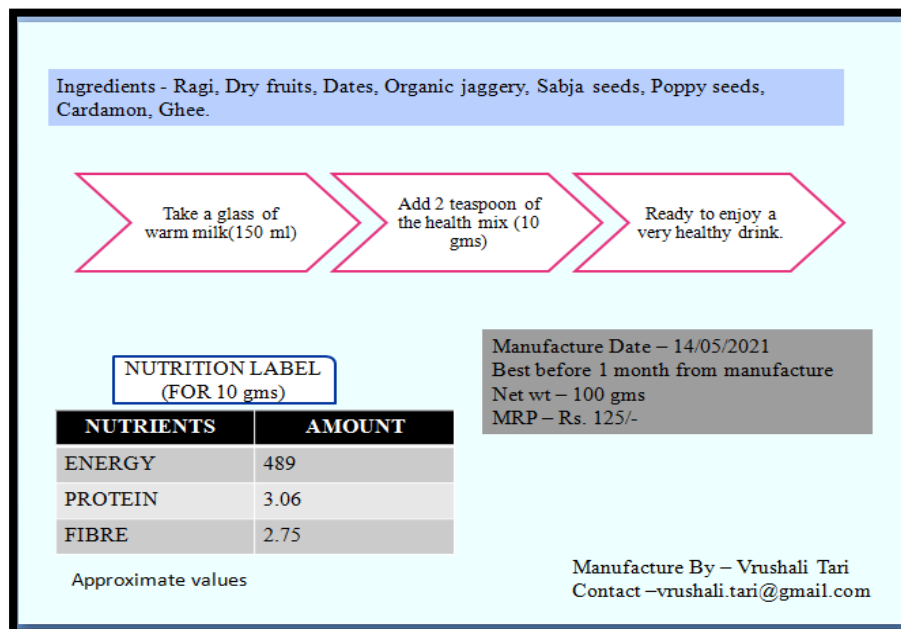


figure5- back label of the mix

VI. SHELF LIFE OF THE PRODUCT FOR 4 WEEKS

The shelf life of the product was done for 4 weeks. The product was tested after every 1 week with the help of same 6 naive panel members. It was done with the help of score card. The attributes which were studied were taste, colour, consistency, sweetness and mouth feel or after taste.

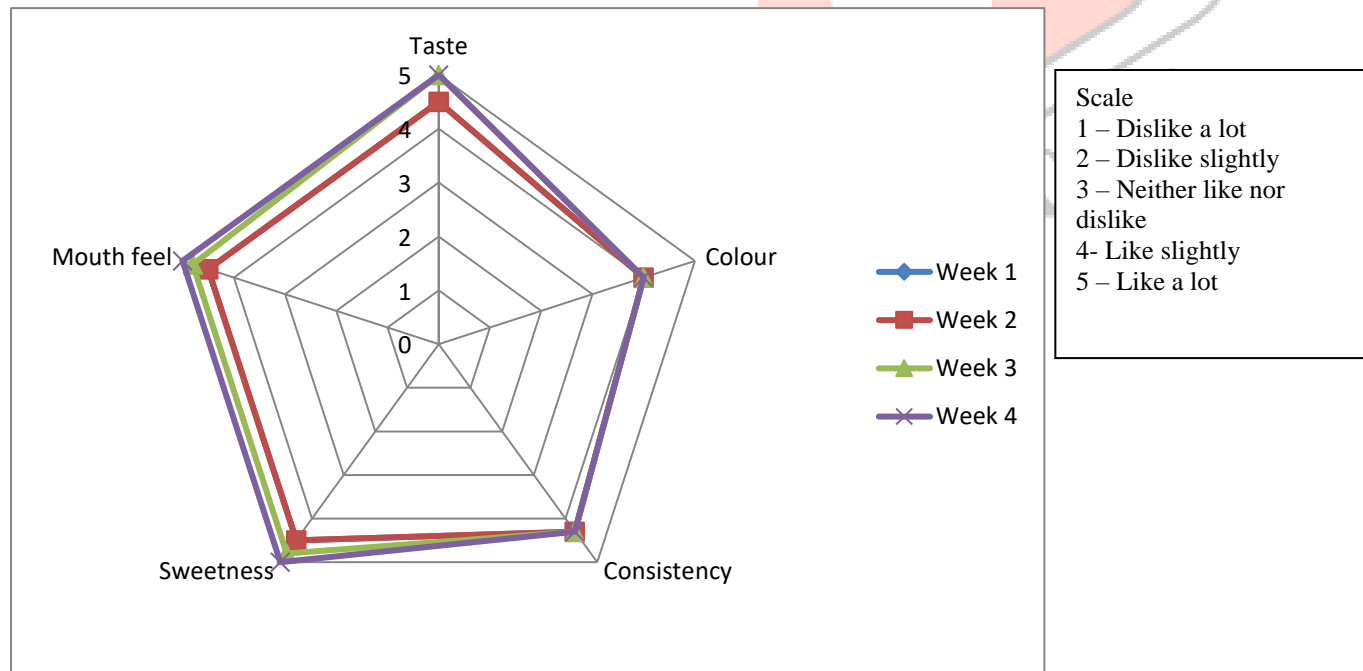


figure 6- shelf life of the product for 4 weeks

As shown in the figure the characteristics of taste, sweetness and mouth feel had increased during the end of one month. This may be because the ingredients mixed well with each other whereas the colour and the consistency parameters remained the same as in the sensory evaluation. All the parameters were rated between 4 and 5 which are acceptable. The product did not lose any of the characteristics and is safe to consume for 1 month.

VII. BUDGETING

The budgeting part of the product is very important for the marketing purpose. The cost is decided after considering all the aspects used for making the product. And manufactures should get the money they invested in the product and also get some profit after selling the product. So the budgeting of this product was also done considering all the aspects of budgeting including the cost of raw ingredients, packaging, labeling and also the miscellaneous cost which included the gas and electricity, rent of the room taken for making the product, employers pay and also the travelling cost for getting the ingredients.

table 2 – budget of the health mix(wholesale prices)

Ingredients	Cost in Rs.
Raw ingredients	171/-
Packaging	2/-
Label	5/-
Miscellaneous cost (travelling, gas, electricity, rent, employers pay)	72/-
TOTAL	250/-

The amounts mentioned in table 1 was used and the product was made. Out of which some amount was used for the evaluation of the mix and a packet of the 100gms was packed and used for the marketing purpose. The price of 1 packet of 100gms was estimated as Rs.125/-. If the 30 packets were sold the amount earned will be Rs. 3750/- and the profit will be around Rs.1750/-. So the profit from 1 packet will be around Rs. 58/-. For making 30 packets the amount invested will be Rs.2000/-. So the profit that will be earned is affordable.

VIII. MARKETING

Marketing is another important stage of the product. The product has to be advertised and the feedback has to be noted. Due to the pandemic situation, it was not possible to actually sell the product. So the photos and the information like the benefits were shared to people on social media like whatsapp and were asked if they would be interested in the product. Also the naive panelist were asked if they would love to buy the “8 to 80 Health mix” and the feedback received was very positive.

IX. SUMMARY

It can be concluded that the health mix has a great market and can prove to be a profitable business and this product further can be made for diabetics people using alternative sweeteners, with other added ingredients and for other clinical conditions.

X. REFERENCES

1. PLANT-BASED PROTEIN DIETS FOR CHILDREN, ZIMLICH, RACHAEL, BSN, RN.CONTEMPORARY PEDIATRICS; MONMOUTH JUNCTION VOL. 38, ISS. 4, (APR 2021): 28-29
2. Schönfeldt, H., & Gibson Hall, N. (2012). Dietary protein quality and malnutrition in Africa. *British Journal of Nutrition*, 108(S2), S69-S76. doi:10.1017/S0007114512002553
3. E.C. Henley, J.R.N. Taylor, S.D. Obukosia, Chapter 2 - The Importance of Dietary Protein in Human Health: Combating Protein Deficiency in Sub-Saharan Africa through Transgenic Biofortified Sorghum,
4. Watford, M., & Wu, G. (2018). Protein. *Advances in nutrition (Bethesda, Md.)*, 9(5), 651–653. <https://doi.org/10.1093/advances/nmy027>
5. INTERNATIONAL JOURNAL OF RESEARCHES IN BIOSCIENCES, AGRICULTURE AND TECHNOLOGY © VISHWASHANTI MULTIPURPOSE SOCIETY (Global Peace Multipurpose Society) R. No.659/13(N), I J R B A T, Vol. VI (Special Issue 1), January 2018 : 577- 580 ISSN 2347 – 517X
6. Anuradha D. Desai et al, Effect of Supplementation of Malted Ragi Flour on the Nutritional and Sensorial Quality Characteristics of Cake, *Advance Journal of Food Science and Technology* 2(1): 67-71, 2010 ISSN: 2042-4876

7. Jia-Wei Han et al, Food Packaging: A Comprehensive Review and Future Trends, First published: 15 May 2018
<https://doi.org/10.1111/1541-4337.12343>
8. Van den Wijngaart AW. Nutrition labelling: purpose, scientific issues and challenges. Asia Pac J Clin Nutr. 2002;11(2):S68-71. doi: 10.1046/j.1440-6047.2002.00001.x. PMID: 12074189. Nutritional labeling

LINKS

1. <https://poshan.outlookindia.com/story/poshan-news-protein-a-key-building-block-of-life/347918>
2. <https://www.xlplastics.com/food-packaging-bags-types-uses/>
3. <https://www.mayoclinic.org/healthy-lifestyle/nutrition-and-healthy-eating/in-depth/nutrition-facts/art-20048426>

