

Estimation of Sensory Evaluation and Functional Properties of Therapeutic Bar

Km Kajal^{a*}, Neetu Singh^{a++} and Prashant Sagar^{a#}

^a Department of Food and Nutrition, School of Home Science, Babasaheb Bhimrao Ambedkar University, Lucknow, Uttar Pradesh-226025, India.

Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Article Information

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/102388>

Original Research Article

Received: 02/05/2023

Accepted: 04/07/2023

Published: 20/07/2023

ABSTRACT

This research aims to study the functional properties and sensory evaluation of therapeutic bars and their consumer acceptability. The therapeutic bar was prepared and formulated by using a mixture of millets and chyawanprash composition. Chyawanprash is made up of Indian gooseberries, dates, jaggery, clarified butter, sesame oil, honey, dry ginger powder, cloves, pipili, green cardamom, cinnamon, cumin seeds, black pepper corn, mace spice, fennel seeds, bay leaf, rose petals, saffron strands, some herbs (ashwagandha, shatavari, mulethi and giloy). For making therapeutic bar some other ingredients included eg; millets (sorghum and pearl millets). Therapeutic bar is made by using formulation of chyawanprash composition with millets. Thirty members of the department of food and nutrition team sampled therapeutic bar. 9 point hedonic scale is used for sensory evaluation of therapeutic bar. Due to its rich nutritional profile and as well as the several hundred years that of years that chyawanprash previously used as health supplement and nutraceutical food product. This bar is nutrient-dense as a result of the combination of sorghum and pearl millets. It is meant to refill depleted reserves of life force and to sustain stamina, strength, and vitality while slowing the ageing process. As a result, the purpose of this research is to develop a wholly herbal chyawanprash with outstanding immune boosting efficacy and a very appealing sort of formed bar.

⁺⁺ Associate Professor;

[#] Research Scholar;

^{*}Corresponding author: E-mail: kajalk1992000@gmail.com;

Keywords: Functional properties; therapeutic bar; herbs; millets; sensory evaluation.

1. INTRODUCTION

Chyawanprash is indeed a health supplement based on Ayurveda, the traditional Indian system of medicine. It is a herbal jam-like formulation that consists of a blend of herbs, minerals, and other ingredients. The main ingredient in Chyawanprash is Indian gooseberry, also known as amla, which is rich in vitamin C and antioxidants [1-4]. Other ingredients commonly found in Chyawanprash include jaggery (a type of sugar), honey, cow ghee (clarified butter), dates, raisins, sesame oil, berries, and a variety of herbs and spices. The name "Chyawanprash" comes from the combination of two Sanskrit words. "Chyawan" refers to an ancient Indian sage named Chyawan, who, through his severe rituals, aged quickly and lost his strength. "Prash" means meal or food. It is said legend that Sage Chyawan was given a rejuvenating tonic similar to jam, which became known as Chyawanprash. It was believed to restore his vitality, vigor, and youthfulness [5,6]. Chyawanprash has a long history in Ayurvedic medicine and has been used for generations as a health supplement and medicine [7-11]. It is considered a polyherbal compound, meaning it contains a mixture of various herbs and herbal extracts. Chyawanprash is believed to provide numerous health benefits, including improving immunity, promoting longevity, supporting respiratory health, aiding digestion, and nourishing the body. While Chyawanprash has been traditionally used and valued in Ayurveda, it's important to note that individual experiences and results may vary. If you are considering incorporating Chyawanprash into your health routine, it is advisable to consult along with a healthcare professional or an Ayurvedic practitioner to assure it is suitable for your specific needs and health condition [12,13].

Chyawanprash is indeed a traditional Ayurvedic health supplement that has been consumed in India for centuries. It is a herbal jam-like mixture made from a variety of herbs, fruits, extracts, and treated minerals [14-16]. The formulation of Chyawanprash can vary, but it typically includes ingredients such as amla (Indian gooseberry), ashwagandha, ghee (clarified butter), honey, and various medicinal herbs. Chyawanprash is often touted for its potential health benefits, and it has traditionally been considered a rejuvenating and anti-aging food in Ayurvedic medicine. It is believed to support the immune system, enhance

digestion, improve respiratory health, boost energy levels, and promote overall well-being. These beliefs have been passed down through generations and have become an integral part of Indian cultural practices.

While Chyawanprash's functional properties have been recognized in Ayurveda for centuries, modern scientific research has also shed light on its potential advantages. Many of the ingredients in Chyawanprash are rich in antioxidants, which help protect the body against oxidative stress and damage caused by free radicals. Additionally, some studies have found that certain herbs and extracts in Chyawanprash may have immune-boosting, anti-inflammatory, and anti-aging properties.

Therapeutic bars, also known as energy bars or cereal bars, are often considered a healthy type of food. They are designed to provide a convenient and portable source of nutrients and energy, making them popular among people with busy lifestyles or those who engage in physical activities. These bars typically contain a variety of ingredients that offer a range of nutrients, such as proteins, carbohydrates, healthy fats, vitamins, and minerals. The availability of therapeutic bars in small packets or pouches makes them easy to carry around and consume on the go. This convenience factor has contributed to their popularity, as they can be eaten at any single one time when a quick and nutritious snack is needed. They are often used as a substitute for traditional meals or as a supplement to provide an additional nutrient boost. The market for energy bars has indeed experienced gradual growth due to the increasing demand for healthy, innovative, and practical food options. As consumers become more health-conscious and seek convenient alternatives to traditional meals, therapeutic bars have gained traction. Manufacturers have responded to this trend by introducing a wide range of energy bars with different characteristics and purposes.

Some energy bars are specifically formulated for athletes and fitness enthusiasts, containing higher amounts of protein and carbohydrates to support muscle recovery and performance. Others may be tailored for specific dietary preferences or restrictions, such as gluten-free, vegan, or organic bars. Additionally, there are bars that focus on specific nutritional benefits, such as high fiber content or added vitamins and

minerals. Overall, therapeutic bars offer a convenient and nutritious option for individuals seeking a quick and on-the-go snack. However, it's important to note that not all energy bars are created equal, and the nutritional composition can vary significantly between brands and types. It's always a good idea to read the labels and choose bars that align with your specific dietary needs and goals. New product development allows companies to optimize product properties and attributes, including shape, color, appearance, flavor, texture, and component interaction. By investing in research, development, and iterative refinement, businesses can create high-quality products that meet customer expectations and stand out in the market. The 9-point hedonic scale was used to assess the degree of acceptability of the developed product.

2. MATERIALS AND METHODS

2.1 Ingredients

Ingredients used for making therapeutic bar.

Table 1. List of ingredients with quantity

| Name of the ingredients | Quantity |
|-------------------------|----------|
| Indian gooseberries | 1kg |
| Dates | 400g |
| Jaggery | 1200g |
| Ghee | 330g |
| Sesame Oil | 80ml |
| Honey | 150g |
| Mulethi | 100g |
| Shatavari | 50g |
| Giloy | 20g |
| Ashwagandha | 20g |
| Dry ginger powder | 10g |
| Cloves | 10g |
| Pipli | 20g |
| Green Cardamom | 25g |
| Cinnamon | 25g |
| Cumin seeds | 10g |
| Black pepper corn | 10g |
| Mace spice | 1g |
| Fennel seeds | 30g |
| Bay leaf | 5g |
| Rose petals | 5g |
| Saffron strands | 2g |
| Pearl millet | 360g |
| Sorghum | 360g |

2.2 Method of Making Therapeutic Bar

Wash the amla thoroughly and place it in a pressure cooker. Add a cup of water and cook until you hear three whistles. Turn off the flame and allow the pressure cooker to release the steam. Open it and transfer the cooked amla to a bowl. Let it cool down. Remove the seeds from

the cooked amla and separate them. Place the amla in a grinder jar. Add 50-60 fresh holy basil leaves and grind them together without adding water until you obtain a smooth and lump-free puree. This puree should have a smooth consistency. Dry the rose petals in a hot air oven. Take a small grinder jar and add dry ginger, cloves, pipli, green cardamom, cinnamon, cumin seeds, black peppercorn, mace spice, fennel seeds, dried rose petals, and bay leaf. Grind these ingredients to a very fine powder and then sieve it to remove any coarse particles. Transfer the powder to a bowl and set it aside. Grind all the herbs, namely Ashwagandha, Mulethi, Shatavari, and Giloy, and sieve the mixture using a muslin cloth. Set the sieved powder aside. Wash and grind the fresh seedless dates to make a fine paste. Transfer the paste to a separate bowl and keep it aside. Heat sesame oil in a pan and add ghee to it. When the oil is hot, add the amla paste and cook it on low flame while stirring continuously. Gradually, the mixture will start to thicken, and the oil will be absorbed. Cook for around 5 minutes until the mixture thickens. Add the dates paste to the mixture and mix it well. Cover the pan and cook for an additional 2 minutes, stirring continuously over low heat until the oil starts to separate. Add jaggery to the mixture and mix it well. The color of the mixture will darken after adding jaggery. Cover the pan and cook for another 2 minutes. Open the pan and stir the mixture. Once it reaches a thick consistency and starts to leave the pan, add the ground herbs and spices. Cook for 5 minutes, ensuring everything is well combined. Add honey to the mixture and mix it well over low heat. Cover the pan and cook for 1 minute. Finally, add saffron strands and give the mixture a quick stir. To make a therapeutic bar, roast sorghum and pearl millets in a pan. Now, add the millets to the chyawanprash and knead thoroughly to form a dough. Form it into a bar shape and package it.

2.2.1 Preparation of therapeutic bar

Making of Therapeutic bar has been shown in Chart 1.

Preparation of therapeutic bar has been shown in Fig. 1.

2.3 Functional Properties of Therapeutic Bar

2.3.1 Boosters immunity

Because of the inclusion of antioxidants and Vitamin C, Chyawanprash is an excellent

medicine for boosting the immune system, fighting germs, and protecting the body from numerous diseases. It also has potent anti-viral, anti-bacterial, and antifungal qualities, making it particularly beneficial in avoiding infections such as fever, common cold, sore throat, and other respiratory issues.

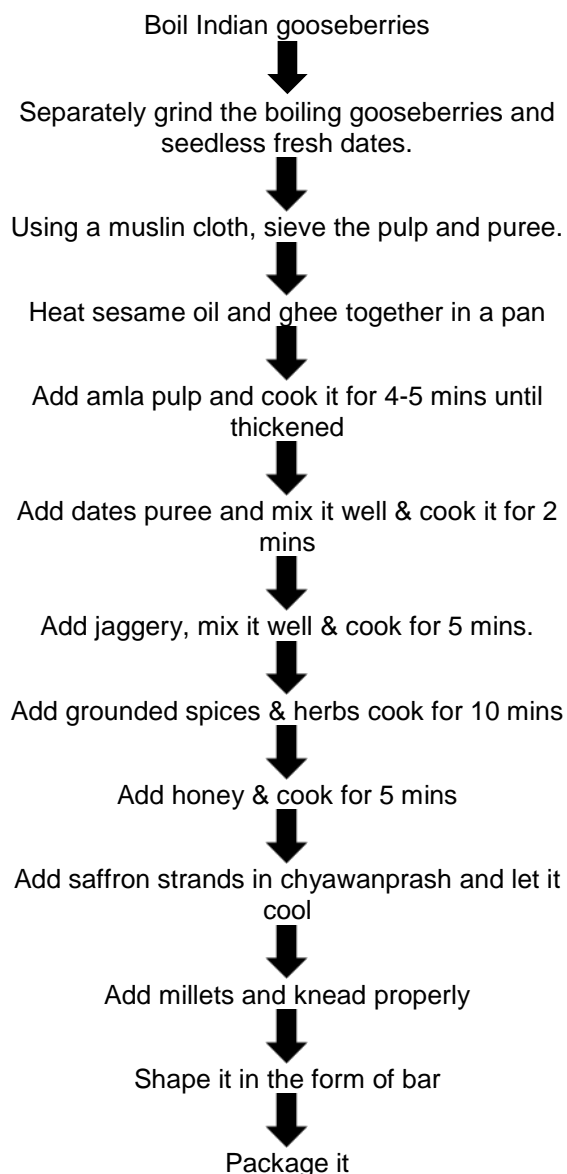


Chart 1. Flow chart of making Therapeutic bar

2.3.2 Promotes digestion

Aside from adaptogenic capabilities, chyawanprash has strong digestive properties. The formulation's anti-flatulent activity lowers gas generation in the alimentary canal, reducing bloating, flatulence, and abdominal distension. The high fibre content of the root powder makes

it an effective cure for constipation and other digestive disorders. The antacid function of the herbs prevents the creation of excessive acids in the stomach, so treating indigestion, ulcer, gastritis, and facilitating better nutrient absorption in the body. The wide heart-healthy characteristics of the herbs in this formulation, such as Arjuna and Ashwagandha, play an important role in treating a variety of cardiac problems. It calms the mind and relaxes the heart system, which is highly good for people suffering from arrhythmias and palpitations. It is extremely important in strengthening the heart muscles, lowering cholesterol levels in the blood, and preventing lipid build-up, all of which minimises the risk of atherosclerosis, heart attacks, heart blocks, blood clots, and other conditions.

2.3.3 Slows ageing process

Chyawanprash is widely known for its regenerating properties. It not only aids in tissue repair and regeneration, but it also protects the body against cellular damage and thereby slows the ageing process in the tissues of the heart, lungs, liver, and skin due to the high antioxidant qualities of numerous herbs and spices. The presence of antioxidants protects the body from free radical damage and maintains a balanced calcium ratio in the bones, making one stronger.

2.3.4 Enhances Fertility and Libido

Chyawanprash is a one-time traditional cure for increasing libido and fertility in men. It has potent aphrodisiac qualities, which assist to reduce mental stress and anxiety while also stimulating the production of reproductive hormones in both men and women. It is important for increasing virility and stamina in men and improving lactation in women. Consuming Chyawanprash in a specific amount alongside milk before sleeping has been shown to stimulate blood circulation in the genitals, improving libido in both men and women.

2.3.5 Skin augmentation

Chyawanprash, which is rich in antioxidants, is a blessing for achieving immaculate, beautiful skin. It protects the skin from oxidative radical damage caused by damaging UVA and UVB rays, lowering the likelihood of wrinkles, spots, fine lines, dark circles, and other symptoms of ageing. The formulation's abundance of anti-inflammatory herbs also decreases allergic

disorders such as acne, pimples, and zits, as well as protects many other skin illnesses.

2.3.6 Aids in weight loss

The high concentration of flavonoids in Chyawanprash aids in weight loss. Because it is high in fibre and necessary nutrients, when taken

on a regular basis, this herbal composition satisfies hunger and avoids overeating, and can thus play an important role in one's weight loss routine. The powder also reduces LDL (Low-Density Lipoproteins, or bad cholesterol) formation in the body, increasing metabolism and assisting the body in maintaining a healthy weight.



Fig. 1. Preparation of therapeutic bar

Table 2. Sensory evaluation test

| | | | | |
|---|-------------------------|----------------------|--------------------|---------------------------|
| Name: | Dept: | | | |
| In front of you is a coded sample. Taste the sample and tick how much you like/dislike it. You can taste sample more than once. | | | | |
| Rating | Appearance/Color | Taste/Flavour | Smell/Odour | Texture/Mouth feel |
| Like extremely | | | | |
| Like very much | | | | |
| Like moderately | | | | |
| Like slightly | | | | |
| Neither like or dislike | | | | |
| Dislike slightly | | | | |
| Dislike moderately | | | | |
| Dislike very much | | | | |
| Dislike extremely | | | | |

9 Point Hedonic Scale Sample Table

2.4 Sensory Analysis

Sensory qualities of Therapeutic bar tests were assessed for various tangible properties by group of 30 untrained panelist sensory properties such as appearance, flavours, aroma, texture, acceptability and overall qualities were evaluated by the means of 9 Point hedonic scale which range from 9-1 and rates by the following manner such as:

- 9-like extremely,
- 8-like very much,
- 7-like moderately,
- 6-like slightly,
- 5-neither like or dislike,
- 4-dislike slightly,
- 3-dislike moderately,
- 2-dislike very much
- 1-dislike extremely.

3. RESULTS AND DISCUSSION

3.1 Sensory Evaluation

Therapeutic bar was evaluated by 30 untrained members on following characteristics.

- Appearance
- Taste
- Smell
- Texture
- Overall Acceptability

Table 3. Average of sensory evaluation

| S.no | Parameters | Average score |
|------|-----------------------|---------------|
| 1 | Appearance | 8.66 |
| 2 | Taste | 8.76 |
| 3 | Smell | 8.73 |
| 4 | Texture | 8.66 |
| 5 | Overall Acceptability | 8.7 |

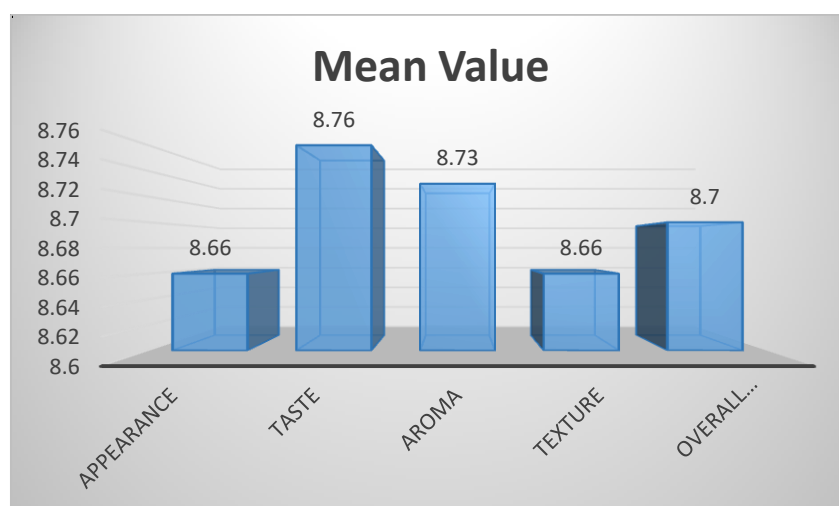


Fig. 2. Mean value of hedonic scale

3.2 Functional Properties

- It boosts immunity
- It helps in promotes digestion
- Slows Ageing Process
- Enhances Fertility and Libido
- Skin Augmentation
- Aids in Weight Loss

4. CONCLUSION

After sensory evaluation it was found that lowest score was given to texture which was 8.66 and appearance which was 8.66 and highest score is given to taste (8.76) and overall acceptability of the product is 8.7.

Therapeutic bars' functional qualities can vary based on the exact chemicals and formulations employed. While certain therapeutic bars may provide benefits such as boosting immunity, stimulating digestion, slowing down the ageing process, enhancing fertility and libido, assisting in weight loss, and improving skin health, others may not.

ACKNOWLEDGEMENT

This work was supported by Babasaheb Bhimrao Ambedkar University. I would want to express my heartfelt gratitude to my supervisor Dr. Neetu Singh (Associate Professor), who made this work possible. Her direction and assistance carried me through all stages of writing my project. I'd also like to give special thanks to Mr. Prashant Sagar (Research scholar) for his advice, support, and encouragement during the entire process.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Debnath PK, Chattopadhyay J, Mitra A, Adhikari A, Alam MS, Bandopadhyay SK, Hazra J. Adjunct therapy of Ayurvedic medicine with anti tubercular drugs on the therapeutic management of pulmonary tuberculosis. *Journal of Ayurveda and Integrative Medicine*. 2012;3(3):141.
2. Ihuoma A, Marvellous OI, Ndukwe M. Microbiological, nutritional and sensory evaluation of snack bars developed using Bambara groundnut (*Vigna subterranean* L.) and maize (*Zea mays*). *African Journal of Microbiology Research*. 2022;16(1):8-23.
3. Jain RK, Bal S. Properties of pearl millet. *Journal of Agricultural Engineering Research*. 1997;66(2):85-91.
4. Jambunathan R, Subramanian V. Grain quality and utilization of sorghum and pearl millet. *Biotechnology in Tropical Crop Improvement*. 1988;133-139.
5. Adámek M, Adámková A, Miček J, Borkovcová M, Bednářová M. Acceptability and sensory evaluation of energy bars and protein bars enriched with edible insect. *Potravinárstvo Slovak Journal of Food Sciences*; 2018.
6. Basavaraj G, Rao PP, Bhagavatula S, Ahmed W. Availability and utilization of pearl millet in India. *SAT Ejournal*. 2010;8.
7. Kumar A, Rinwa P, Kaur P. Chyawanprash: A wonder Indian rasayana from ayurveda to modern age. *Crit. Rev. Pharm. Sci*. 2012;1:1-8.
8. Kupkar M, Kusarkar P, Dudhgaonkar T. A study on formulation and evaluation of herbal chyawanprash chocolate; 2022.
9. Narayana DA, Durg S, Manohar PR, Mahapatra A, Aramya AR. Chyawanprash: A review of therapeutic benefits as in authoritative texts and documented clinical literature. *Journal of Ethnopharmacology*. 2017;197:52-60.
10. Nielsen SS, Nielsen SS. Total carbohydrate by phenol-sulfuric acid method. *Food Analysis Laboratory Manual*. 2017:137-141.
11. Parle M, Bansal N. Traditional medicinal formulation, Chyawanprash—A review; 2006.
12. Wagh VD, Patil SV, Surana SJ, Wagh KV. Medicinal plants used in preparation of polyherbal ayurvedic formulation Chyawanprash. *J Med Plants Res*. 2013;7(2801):e2814.
13. Zerbini E, Thomas D. Opportunities for improvement of nutritive value in sorghum and pearl millet residues in South Asia through genetic enhancement. *Field Crops Research*. 2003;84(1-2):3-15.
14. Rai KN, Gowda CLL, Reddy BVS, Sehgal S. Adaptation and potential uses of sorghum and pearl millet in alternative and health foods. *Comprehensive Reviews in Food Science and Food Safety*. 2008;7(4):320-396.
15. Sharma R, Martins N, Kuca K, Chaudhary A, Kabra A, Rao MM, Prajapati PK.

- Chyawanprash: a traditional Indian bioactive health supplement. *Biomolecules*. 2019;9(5):161.
16. Simonyan JK, Yiljep DY. Investigating grain separation and cleaning efficiency distribution of a conventional stationary rasp-bar sorghum thresher. *Agricultural Engineering International: CIGR Journal*; 2008.

© 2023 Kajal et al.; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

*The peer review history for this paper can be accessed here:
<https://www.sdiarticle5.com/review-history/102388>*