

Original Research Article

Development and Organoleptic Evaluation of Vegan Honey Tender Bamboo Shoots Murabba

ABSTRACT

The aim of this study was to make a Bamboo Shoots (*phyllostachys edulis*) are regarded as one of the beneficial health foods due to their high protein, carbohydrate, vitamin, fiber, and mineral composition and very low fat content. In the current study, "Value of tender bamboo shoots murabba with cinnamon, cardamom, lemon, vegan honey, jaggery," vegan honey bamboo murabba was made in the food science and technology laboratory of the department of food and nutrition at Babasaheb Bhimrao Ambedkar University in Lucknow. Five different preparation methods for the vegan honey bamboo murabba. This research sought to determine whether vegan honey bamboo murabba was acceptable based on a sensory evaluation test completed at BBA University in India. Tender bamboo shoots, jaggery, vegan honey, cinnamon, cardamom, ginger, juice, lemon juice, and water made up the basic ingredients for bamboo murabba. These ingredients were combined, dissolved, condensed, and made to an 80°C (about 50°C) jaggery content. In a glass container, bamboo that had been heated to 50°C was placed. This sample was referred to as a cold-packed bamboo murabba. In order to sterilize it, the hot-pack murabba was heated on low temperature for 20 minutes. The bamboo was sterilized after 20 minutes and allowed to settle at room temperature. The sample that underwent sterilization was referred to as a heated murabba. Each sample was assessed using a Murabba sample, which was graded on a 9-point hedonic scale for flavor, smell, texture, appearance, and general acceptances in the sensory test. The color, sweetness, acidity, taste, and flavor of each sample were also assessed. At the BBA University of Lucknow, a panel of 40 BBAU students and faculty members evaluated the hot-pack and reheated murabba. It was thought that the tender bamboo shoots murabba had potential to become a novel processed food in India.

Comment [DDM1]: Write final concluding remarks based on your findings only

Keyword

Tender bamboo shoots, Vegan honey, tender bamboo shoots murabba, organoleptic evaluation, Vegan honey tender bamboo shoots murabba

1. INTRODUCTION

The bamboo, a member of the Poaceae family of forest tree grasses, is thought to be one of the most beneficial and versatile species. There are more than 1250 different species of bamboo, however most of them are found in Southeast Asia. Because of their high levels of protein, carbohydrates, vitamins, fiber, and minerals, as well as their comparatively low levels of fat, bamboo shoots are recognized as one of the healthiest foods. Despite the fact that bamboo shoots have a number of nutritional benefits, most countries in Southeast Asia and East Asia only occasionally eat them. Bamboo is most frequently consumed as food in the Northeastern area of India, where it is a crucial ingredient in many local cuisines. Fresh bamboo shoots are among the most often consumed traditional dishes among the many ethnic groups shoot (P. Nongdam and Leimapokpam Tikendra 2014). In some species, the leaves that shield the shoots are colored black, brown, yellow, or purple and have little hairs on them. Tender bamboo has a sharp flavor and

an acerbic appearance similar to coil springs. They typically wear specialized clothing called Culm sheaths, which are frequently multicolored when young and serve as protection. If prepared on the day of harvest, the white meat, which is visible once the Culm sheath is removed, becomes yellow when cooked and is incredibly delicious(jatindra k sahu 2010). Bamboo shoots are low in fat and high in proteins, dietary fibers, minerals, and vitamins. (Choudhury et al., 2012). Veganism is a style of life devoid of any kind of animal exploitation or suffering, according to Donald Watson's 1944 definition. Plants, fruits, and roots are used to make vegan honey. With this technique, bees are not utilised. We harvested pollen and nectar from the plants. Bees are not harmed during the development of this method. We only use raw sugar/jaggery or other sweeteners, organic plants, fruits, and pure water. No colorants, flavors, or preservatives are added. You get everything straight from the plants. In order to improve vegan honey and provide health benefits comparable to those of genuine honey, spices are also used as flavoring agents. A development in the manufacture of animal-free goods is vegan honey. Use of jaggery is highly valued in Indian culture. Eating jaggery provides a variety of health benefits. It is recognized as a natural sweetener. In our present age of modernism, sugar has largely taken the role of jaggery, especially in cities, although this is still consumed in almost every household in our villages. Sugar has no good impacts and is harmful to your health. While sugar is unhealthy for us, it is good for us. Ayurveda claims that a person can avoid numerous diseases by taking a small amount of jaggery each day. Jaggery use increases as soon as winter arrives. But in actuality, we should eat it all year long. You eliminate numerous illnesses by consuming it. The anti-oxidant flavonoids and vitamin C found in lemons are excellent sources. Free radicals can damage cells, therefore antioxidants help the body get rid of them. In addition to enhancing health and wellbeing, these vitamins and minerals can also offer illness prevention. The eating of lemons may have some of these benefits. Lemons are an extremely bright yellow citrus fruit. Both culinary and therapeutic uses are possible for lemon juice. Lemons are a common ingredient in drinks, sauces, dips, and sweets all around the world. Cinnamon is one of the most important spices that people use on a daily basis. Cinnamon's primary ingredients are its essential oils and a number of compounds, including cinnamaldehyde, cinnamic acid, and cinnamate. In addition to being an antioxidant and an anti-inflammatory, cinnamon has been demonstrated to lower cholesterol and the risk of cardiovascular disease. It is also thought to have preventive benefits against neurological illnesses such as Parkinson's and Alzheimer's. Cardamom is known as the "queen of spices" because of its alluring aroma, versatility in flavoring food and beverages, and significant use in traditional regional remedies. Cardamom is a spice that is used in the food industry to flavor meats, baked foods, soups, fruit products, jellies, and pickles. Depending on the recipe, it can be used as seeds, pods, or powdered seeds in quantities that are frequently weighed out by the teaspoon to flavor both sweet and savory dishes. half a teaspoon(Keith Singletary, PhD 2004).

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2.

MATERIAL AND METHOD

2.1. Collection of material

The samples used for the research work were Apple fruits, Jaggery, Spices i.e. Ginger, Cinnamon and lemon market of purchased from local market of BBAU Gate no -1, Lucknow, UP, India. The *Dendrocalamus strictus* sample's edible shoots were procured from local sources in the Indian village of Muda Neemgaon, in the district of lakhimpur kheri, in the state of Uttar Pradesh. 2 weeks after collection, the samples were brought to the lab. The shoots underwent defoliation and washing in the lab. After the undesirable components were eliminated, the soft, palatable sections were used for further processing.

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2.2. Preparation of Vegan Honey

Fruit of the apple that was used to conduct this study. The market was visited to choose some fresh apple fruit. Fruits that were rotten, infected, or damaged were rejected after sorting. To remove dirt, the apple fruits were properly washed in clean water. Damaged and discolored fruit portions were

removed and turned into juice and other items. The apple was peeled, chopped, and ground. A muslin cloth was used to filter it, and the juice was then taken from it. At the School of Home Science at Babasaheb Bhimrao Ambedkar University in Lucknow Department of Food and Nutrition's Food Science & Technology Laboratory created apple-cinnamon vegan honey. 250g of the net amount are ready. First, raw materials are prepared. In other words, apple juice, lemon juice, and cinnamon powder. Following the heating of 250g of apple juice over a medium flame, the remaining components were added. Including 20 ml of lemon juice, 250 g of jaggery, and 2.5 g of cinnamon powder. All ingredients are properly combined in apple juice during cooking with the use of a ladle. The substance is boiled until it has been reduced by half, and a single-stage thread test can reveal the final product. Poured into a sterilized glass container after cooling for 2 to 5 minutes.

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2.3. Location of the study

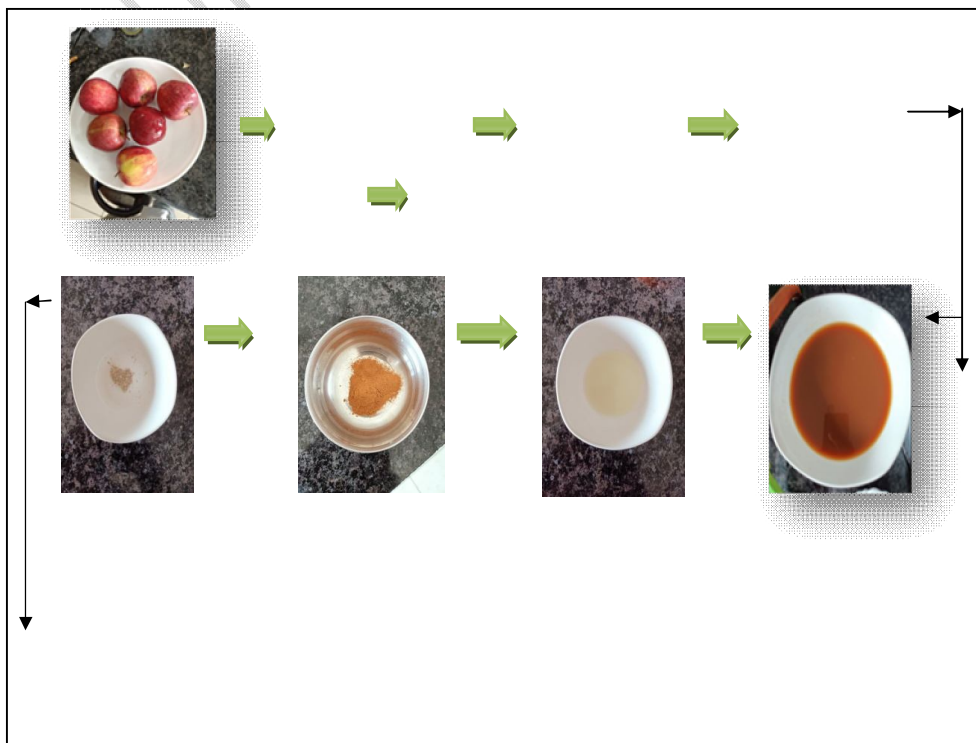
The preparation of bamboo murabba was carried out in the Food Science & Technology laboratory, Department of Food and Nutrition, School of Home Science, Babasaheb Bhimrao Ambedkar University, Lucknow, in addition to complete all the study's.

2.4. Preparation of vegan honey

2.4.1. Flow chart of



vegan honey



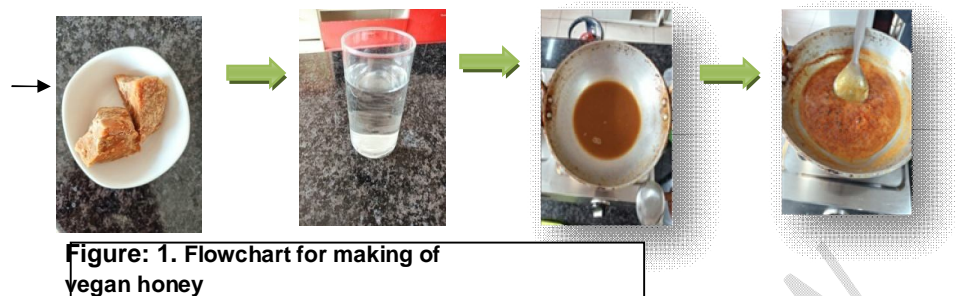
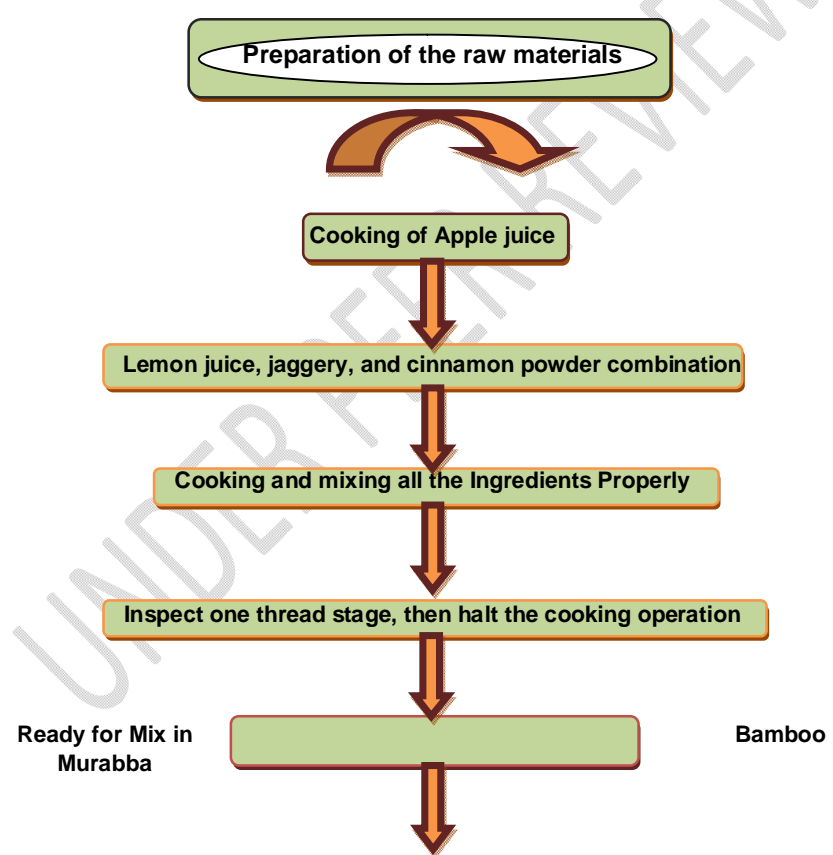


Figure: 1. Flowchart for making of vegan honey



Took fresh bamboo shoots and then cut them after being sliced into circular pieces, the shoots were rinsed under running water to remove any debris or extra portions. The bamboo shoot pieces were blanched for 30 minutes with water changes every 10 minutes. Blanched pieces were boiled into metal sheets to let the excess water evaporate.

Image: 2a. Tree of tender bamboo shoots



Image: 2b. Tender bamboo shoots



Image: 3. Fresh Bamboo Shoots after Defoliation of Outer Covering and Rinsing with Running Water



Figure: 2. Flowchart for making of vegan honey bamboo murabba

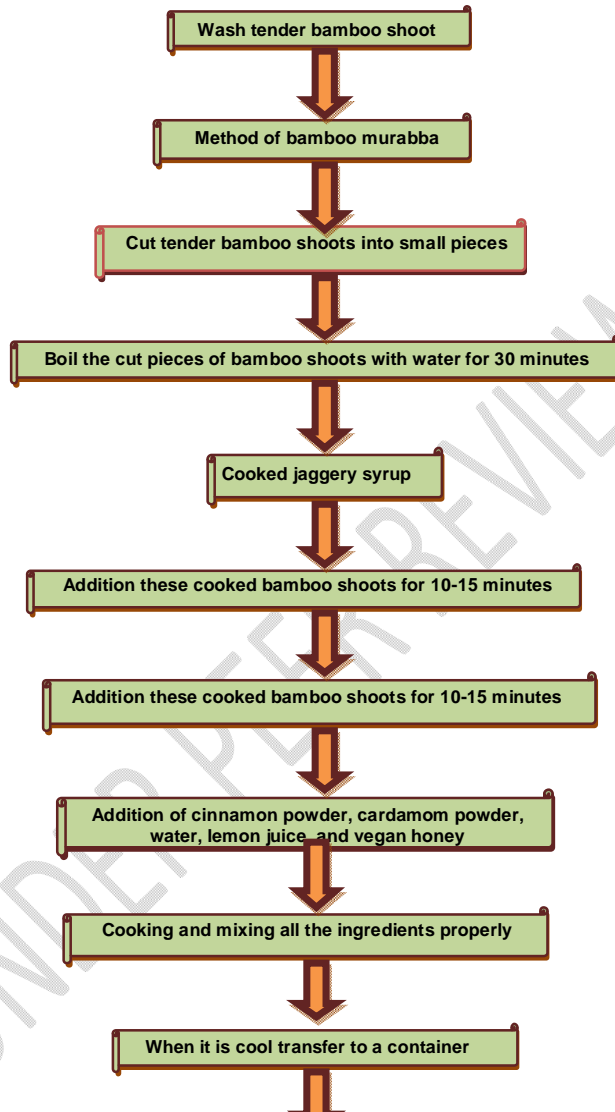




Image: 4. Fresh Bamboo Shoot Pieces after Cutting



Image: 5. Vegan honey bamboo murabba

2.6. Tender Bamboo shoots vegan honey murabba

Murabba production

Murabba was cooked using the bamboo shoots was boiled then started cooking with jaggery then they includes vegan honey, jaggery, Cinnamon powder, Cardamom powder, Ginger

juice, Lemon juice, Water. The mix was cooked at medium temperature on 15 minutes, then chilled and depend an additional minutes.

2.7. Sensory evaluation

When the vegan honey bamboo shoot murabba sample was prepared, the sensory evaluation took place five hours later. 40 untrained students from Babasaheb Bhimrao Ambedker University lucknow composed the sensory panel. Murabba sample was evaluated on a 9-point hedonic scale for flavor, scent, texture, appearance, and over all acceptances. Since the 9-point hedonic scale demonstrates and explained the level of consumer acceptability and pleasure. The hedonic rating card that is displayed in the table was handed to them.

Table: 1. 9-point hedonic scale for sensory evaluation

Score	Rating	Appearance/color	Taste/flavor	Smell / odor	Texture/ mouth feel
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				
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3. Result and discussion

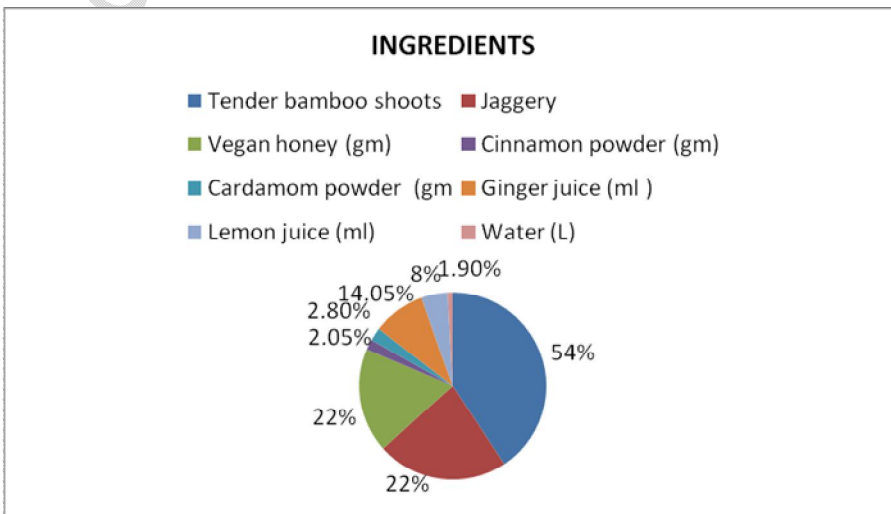
This includes ingredients vegan honey, jaggery, Cinnamon powder, Cardamom powder, Ginger juice, Lemon juice, Water. The prepared of bamboo murabba. These ingredients were combined, dissolved, condensed, and made to 80°C (about 50°C) jaggery content. In a glass container, bamboo that had been heated to 50°C was placed. This sample was referred to as a cold-packed bamboo murabba. In order to sterilize it, the hot-pack murabba was heated on low temperature for 20 minutes. The bamboo was sterilized after 20 minutes and allowed to settle at room temperature.

Comment [DDM8]: In this section need to describe all experimental finding correlating with earlier works and proper justification

Table: 2. Approximate of ingredients composition of Tender Bamboo Murabba

Ingredient								
Bamboo murabba	Tender bamboo shoots (gm)	Jaggery (gm)	Vegan honey (gm)	Cinnamon powder (gm)	Cardamom powder (gm)	Ginger juice (ml)	Lemon juice (ml)	Water (ml)
Control	—	—	—	—	—	—	—	—
100	—	—	—	—	—	—	—	—
T1	45	25	20	2	2.5	10	5	1
T2	50	25	25	2	2.5	15	5	1
T3	55	25	20	2	3	15	10	2.5
T4	60	20	20	2	3	15	10	2.5
T5	60	15	25	2	3	15	10	2.5
Total	270	110	110	10	14	70	40	9.5
Percentage	54.0 %	22.0%	22.0 %	2.05	2.80%	14.05	8.0%	1.9%

Pie :1. Pie representation of ingredients composition of tender bamboo murabba



Displays the percentage of scores for the sensory evaluation of the control ingredients, T5, T4, T3, T2, and T1 samples. The sample T5 that contained Tender bamboo shoots 54%, Jaggery 22%, Vegan honey (gm) 22%, Cinnamon powder(gm) 2.05%, Cardamom powder (gm) 2.80%, Ginger juice(ml) 14.05%, Lemon juice (ml) 8.0%, and Water (ml) 1.9% received the highest ratings for appearance, smell, taste, texture, and overall acceptance in general.

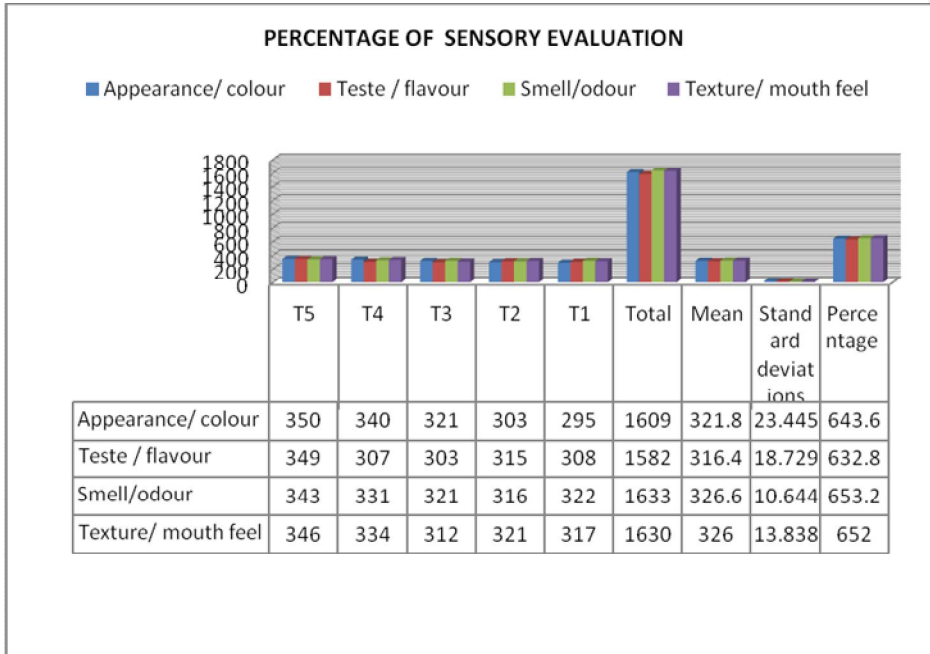
Table: 3. Sensory evaluation of total 40 penal list

Sample	Appearance/ colour	Teste / flavour	Smell/odour	Texture/ mouth feel
T5	350	349	343	346
T4	340	307	331	334
T3	321	303	321	312
T2	303	315	316	321
T1	295	308	322	317
Total	1609	1582	1633	1630
Mean±SD	321.8±23.44568191	316.4±18.72965563	326.6±10.64424727	326±13.8
Percentage	643.6%	632.8%	653.2%	652%

Comment [DDM9]: SD values after two decimals not requires.....

Chart: 1. Graphical representation of sensory evaluation

Comment [DDM10]: SD values after two decimals not requires.....



Displays the percentage of scores for the sensory evaluation of the appearance/colour, test/flavour, smell/ odour, texture/mouth feel. Control ingredients, T5, T4, T3, T2, and T1 samples. The sample T5 that contained appearance/colour 643.6%, test/flavour 632.8%, smell/ odour 653.2%, texture/mouth feel 652% received the highest ratings for appearance, smell, taste, texture, and overall acceptance in general.

4. CONCLUSION

Bamboo murabba helps in increasing height, it improves heart health, it makes our body strong and keeps us away from fatigue and laziness, and many more countless health benefits this bamboo murabba. When consumed fresh could cause health implications. The vegan honey tender bamboo shoot murabba is nutrient rich which makes it more productive in food applications. It has good amount of protein and fibre. The 9-point hedonic scale was used by the faculty of BBAU students of the BBA University to assess the consumer acceptability of the produced product, which is made using Tender bamboo shoots, jaggery, vegan honey, cinnamon, cardamom, ginger, juice, lemon juice, and water. The prepared samples were manufactured to be assessed by a total of 40 BBAU students, who completed score cards for the samples based on their appearance, aroma/odor, texture, colour, taste, and general acceptability. There were only minor changes among the five samples, which were all created using various proportions of all the ingredients. In contrast to the other for examples, sample T5 was thought to be more acceptable. The murabba bamboo shoot can be used in fortification of food products and its utilization can be increased among larger populations. Other nutritional aspects of bamboo shoot murabba need to be explored.

Comment [DDM11]: Health benefits, economic importance and feasibility of the value added products needs to be explain in introductory part. However, the conclusion part should depict one or two clear points on the finding of the experiment

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