

AN ORGANOLEPTIC ANALYSIS ON CUSTOMER ACCEPTANCE OF 'READY- TO-USE' MILLET-MADE JALEBI BATTER

Abstract

The world is amid several health disorders and chronic diseases caused by an imbalanced diet. Millets can play a vital role in human life to live healthy as millets can fulfil the nutritional requirements of the human body. Millets being a traditional crop, yet, there is less demand for direct consumption and we take this as an opportunity and aim in developing value-added products that are ready to use millet-made jalebi batter which would further suit the requirement of the modern population. Keeping in mind the health and other benefits of millets, this study is a four-fold comparative study. The comparison was done based on the organoleptic evaluation done by 30 respondents on 2 different days and it was a blind tasting session where the respondents were not aware of the composition of the jalebi, that is, foxtail millet or sorghum millet or maida. The nutritional composition of the samples was calculated using a database method. As a preliminary step to analyse the market availability and the level of acceptability between consumers a questionnaire survey was done with 429 respondents and the study show a high level of acceptance to millet-made jalebi batter. Statistical analysis was done to analyse the results of the study and the tools used were paired t-test and One-way Anova. All statistical analysis was done with the help of Minitab'18 software. The findings prove that based on organoleptic evaluation the taste, aroma, flavour of jalebi made out of millet and maida batter were identical. The dietary fibre was found more in sorghum millet jalebi followed by foxtail millet jalebi and it was found less in maida made jalebi. Due to lack of time and budget, the study focused on

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I. INTRODUCTION

It was indicated that 44% of the population of 129 different countries had higher levels of under nutrition and obesity. An imbalanced diet is largely responsible for these diseases. In 2015, 10.9% of the world's population were reoriented undernourished. Similarly, 39% were determined to be obese (United Nations Food and Agriculture Organization). In comparison to rice, wheat and maize, millet was considered equal or better in terms of essential nutrients and proteins (Ravi et al., 2010). Millets are rich in polyphenols and other biologically active compounds which rendered them a nutritious food they are also known to play a vital role in decreasing the fat absorption rate, reducing the release of sugars and therefore lowering the risk of diseases related to heart, diabetes and high blood pressure. The consumers are moving towards millet consumption due to increasing awareness of its health benefits (Kumar et al., 2018). Many recent researches have estimated the cultivation requirements of millets, its nutritional composition and health benefits. The carbohydrates content in millets is not less than 56.88g and doesn't exceed 72.97 g per 100 g (Saleh et al., 2013). In regards to protein content of all the millets, except finger millet, is usually between 10 to 11% in the range of 4.76 to 11.70 g per 100 g (Pragya Singh, 2012). Millets are the best source of fibre, that is crude fiber as well as dietary fibre.

In countries like India, Africa and Asia, sorghum millet is well known as 'Jowar' or 'Jowari' and it has been an important staple crop and a known drought-tolerant crop. There are some natural substances found in sorghum which have proven to be associated with many health-related benefits especially people suffering from diabetes, obesity, Gastro-intestinal Tract Disorders, and Hypercholesterolemia. Despite a number of health benefits and nutrition value associated with the grain, due to the lack of awareness about it and its various preparation methods, the grain is not much preferred by the consumers. These traditional millets are emerging as an alternative grain because they are climate friendly and highly nutritious. The change is being introduced to tackle a variety of socio-economic factors, including changing lifestyles, consumer preferences for nutrition and health, and ethical concerns around environmental sustainability (Awika, 2017). Both sorghum and millet are frequently used to produce food products that are gluten-free to target consumers suffering from celiac disease and wheat allergy and associated cereals (Alavi et al., 2018). Sorghum have significant potential in developing food and beverage products and demand for those products will be high as sorghum has a potentially significant source of nutraceuticals such as phenolic antioxidants and in lowering cholesterol. Snack foods like cake, cookies and pasta have been successfully produced by using sorghum but the main challenge is developing wheat-free or 100 percent sorghum and millet-based food items (J. Taylor et al., 2006). The profitability of processed food on the ability of the manufacturer to promote the advantages of unexplored raw materials such as millet (Seth & Rajamanickam, 2012). While millet is a staple food in most of the population in Africa and India, yet the usage of millet as food is limited only to traditional consumers and people in lower income levels, partially due to the lack of availability of these grains in ready-to-eat form and when these millets are commercially processed into value-added food products it helps in developing the economy (J. R. N. Taylor et al., 2014). On the other hand, the easy availability of rice and wheat and easy ways of processing such items have resulted in decreasing the consumption of sorghum and other millets though it is well known for its nutritional benefits. The need for special skills in the processing of sorghum-based products and the non-availability of ready-to-use products in the market are disincentives for broader use of sorghum (Ratnavathi CV, 2014).

In terms of global growth, Foxtail millet has been listed as the sixth highest yielding grain in the world (Saleh et al., 2013). Foxtail millet is currently grown in 26 countries and ranks second in the world in millet production. In terms of yield efficiency, foxtail millet is the fourth most commonly produced millet not using pesticides, making it easier to categorize as a crop obtained from organic farming (Ravi et al., 2010). Significant amount of nutritional ingredients are available in foxtail millet, particularly vitamins, starch, protein and minerals. Foxtail millet is beneficial for a good and health digestive system and provides laxative effect in inducing regular bowel movements (Sharma & Niranjana, 2018). The nutritional properties of foxtail millet had made it versatile as a vital ingredient in cooking noodles or soups, preparation of alcoholic beverages and porridges and pancakes in countries like India and China. (Krishna, 2013). Foxtail millet has also had numerous health benefits in the accumulation of its dietary properties, such as cancer prevention, effects on hypoglycaemic and hypolipidemic (Zhang et al., 2015). It is ironic that foxtail millet and other millets are widely grown in countries with the highest rates of under-nutrition, which indicates a major under-use of its ability as a food source (Sharma & Niranjana, 2018). The highest protein proportion was observed to be albumin, accompanied by gliadin, globulin, gluten, and other proteins, with an overall total protein content of 11,54 g/100 g (Lookhart, n.d.; Verma et al., 2015). 'Ready-to-use Millet-made Jalebi batter as being a convenient food product, it can be made at home without much inconvenience and without compromising health and diet factors. There was an impact on Indian cooking due to the tremendous change in lifestyle for the last few years. This impact, in turn, affected the preference of the people who started showing more interest in fast and easy ways of cooking which would help them in work-life balance. The market potential of these products is enormous, and there will also be a boom in the future. As the dual-income families are increasing in the country and these families prefer spending less time on cooking during weekdays to tackle the hustle and bustle lifestyle in Bengaluru, whereas during weekends they want to spend quality time with their kith and kin, would influence them to procure such ready-made products without compromising the health factor. Manufacturers are constantly trying to find creative ways to develop new products to meet consumer needs. Due to increased availability of goods, connectivity and advertising technologies, consumers are more aware of the food they intake. Therefore, not only flavour and appearance but also quality and health benefits will have an impact on the sale of such products. Ready to use food is not only gaining popularity in dual-income segments it is even primarily accepted by Indian youth and younger generations and these foods are leading towards the future food of the Nation.

II. OBJECTIVES

- To develop a millet-made ready to use jalebi batter
- To evaluate the preference of millet-made jalebi on organoleptic basis and compare with the control sample
- To analyse the level of acceptability of the product between the consumers
- To determine the dietary fibre proportion using database method
- To observe and arrive at the shelf life of the product developed

III. METHODOLOGY

The study involved 2 types of millets, namely, foxtail millet and sorghum millet. Further, 4 samples of jalebi were made with each type of millet with different ratios of flour and millet. (Sample 1- Foxtail Millet, Maida, Gram flour ratio 10:3:1, Sample 2- Foxtail Millet flour, Maida, Gram flour ratio 8:5:1, Sample 4- Sorghum millet flour, Maida, Gram flour ratio 10:3:1 and Sample 5- Sorghum Millet flour, Maida, Gram flour ratio 8:5:1).

In order to compare the millet-made jalebi, a regular maida - made jalebi was prepared and was treated as a control sample. (Sample 3- Maida, Gram flour ratio 10:1).

The study performed an organoleptic evaluation with the help of 30 respondents who recorded their preference based on tasting the jalebi samples. The evaluation was repeated for 2 days. In addition, to analyse the availability of readymade millet-based jalebi batter in the market and to determine the level of acceptability between the consumers for such products was done with help of questionnaire survey (Cronbach's alpha = 0.5). The survey involved 429 respondents of Bangalore who participated and recorded their views. All the results of the study were analysed statistically using Minitab'18 software. The statistical tools used were Cronbach's alpha, paired t test and One-way Anova.

1. *Demographic Details*

The survey had 429 respondents, out of which, 56% of them were in the age group of 18 - 25 years (p-value = 0.00), 216 respondents were female (50%) and 213 were male respondents; no transgender participated in the study (p-value = 0.00). 80% of the survey respondents are conscious about health and diet (p-value = 0.00)

2. **Results & Findings**

Though most of the respondents of the study (41%) consume sweets 'sometimes' (p-value = 0.00) still the respondents (84%) prefer Indian sweets over Continental sweets (p-value = 0.00). The findings prove that the Indian sweet Jalebi, is almost liked by many people (41%, p-value = 0.00). Also, more than half of the respondents (54%) show interest in homemade sweets rather than purchasing from outside (p-value = 0.02). Overall, 57% of the respondents have stated that they have not tried any millet-based sweets (0.01), yet the awareness on the benefits of millets seem to be higher between the respondents as 78% of them have said that they are aware on the health benefits of millets (p-value = 0.00). The study attempted to find out from the consumers whether they have found any readymade jalebi batter available in the market and the result favours the study as 67% of the respondents say 'No' (p-value = 0.00). The main aspect of the study was to recognize the acceptability of the millet-based readymade jalebi batter, once again the findings favour the attempt of the study, as 40% strongly favour and 27% somewhat favour the product (0.00).

3. Finding No.1: Foxtail Millet

Comparison between Foxtail Millet

The foxtail millet jalebi was made in 2 proportions. The details of the proportion are,

FM 1 = 10:3:1

FM 2 = 8:5:1

One-way Anova - Foxtail Millet Sample 1 (Day1)

H_0 = There is no significant difference between the organoleptic factors of foxtail millet jalebi (sample 1)

H_1 = There is a significant difference between the organoleptic factors of foxtail millet jalebi (sample 1)

Table 1: Comparison of Foxtail Millet Sample 1 (Day 1)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	0.5611	0.1122	0.20	0.963
Error	174	98.4333	0.5657		
Total	179	98.9944			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.752136	0.57%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.367	0.765	(7.096, 7.638)
Taste/Flavour	30	7.433	0.858	(7.162, 7.704)
Mouthfeel	30	7.433	0.774	(7.162, 7.704)
Aroma/Smell	30	7.300	0.702	(7.029, 7.571)
After Taste	30	7.367	0.669	(7.096, 7.638)
Overall Acceptability	30	7.467	0.730	(7.196, 7.738)

Pooled StDev = 0.752136

4. Inference

According to Table 1, the null hypothesis is accepted as the p-value (0.96) is greater than the alpha value. This proves a similarity between the various elements of the

organoleptic evaluation. Though there is no difference yet the overall acceptability seems to be higher with a mean of 7.467. Hence this proves the level of acceptance and likeliness of respondents to foxtail millet jalebi that was been evaluated on the first day.

One-way Anova - Foxtail Millet Sample 1 (Day2)

H_0 = There is no significant difference between the organoleptic factors of foxtail millet jalebi (sample 1)

H_1 = There is a significant difference between the organoleptic factors of foxtail millet jalebi (sample 1)

Table 2: One- way Anova Foxtail Millet Sample 1 (Day2)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	2.511	0.5022	0.53	0.751
Error	174	163.933	0.9421		
Total	179	166.444			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.970642	1.51%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.400	1.070	(7.050, 7.750)
Taste/Flavour	30	7.400	1.163	(7.050, 7.750)
Mouthfeel	30	7.700	0.837	(7.350, 8.050)
Aroma/Smell	30	7.600	0.894	(7.250, 7.950)
After Taste	30	7.567	0.971	(7.217, 7.916)
Overall Acceptability	30	7.667	0.844	(7.317, 8.016)

Pooled StDev = 0.970642

5. Inference

According to Table 2, the null hypothesis is accepted as the p-value (0.75) is greater than the alpha value. This proves that no significant difference between the various elements

of the evaluation. Yet, the mouth feel seems to be higher with a mean of 7.7. Hence this proves the level of acceptance and likeliness of respondents to foxtail millet jalebi that was been evaluated on the second day.

One-way Anova - Foxtail Millet Sample 2 (Day1)

H_0 = There is no significant difference between the organoleptic factors of foxtail millet jalebi (sample 2)

H_1 = There is a significant difference between the organoleptic factors of foxtail millet jalebi (sample 2)

Table 3: One-way Anova Foxtail Millet Sample 2 (Day 1)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	1.828	0.3656	0.56	0.734
Error	174	114.500	0.6580		
Total	179	116.328			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.811200	1.57%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.500	0.731	(7.208, 7.792)
Taste/Flavour	30	7.500	0.682	(7.208, 7.792)
Mouthfeel	30	7.500	1.042	(7.208, 7.792)
Aroma/Smell	30	7.467	0.900	(7.174, 7.759)
After Taste	30	7.667	0.758	(7.374, 7.959)
Overall Acceptability	30	7.733	0.691	(7.441, 8.026)

Pooled StDev = 0.811200

6. Inference

According to Table 3, the null hypothesis is accepted as the p-value (0.73) is greater than the alpha value. This proves similarity between the various elements of the analysis.

Despite the similarity, the overall acceptability seems to be higher with a mean of 7.733. Hence this proves the level of acceptance and likeliness of respondents to foxtail millet jalebi that was been evaluated on the first day.

One-way Anova - Foxtail Millet Sample 2 (Day2)

H_0 = There is no significant difference between the organoleptic factors of foxtail millet jalebi (sample 2)

H_1 = There is a significant difference between the organoleptic factors of foxtail millet jalebi (sample 2)

Table 4: One-way Anova - Foxtail Millet Sample 2 (Day2)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	4.244	0.8489	1.12	0.354
Error	174	132.400	0.7609		
Total	179	136.644			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.872307	3.11%	0.32%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.633	0.765	(7.319, 7.948)
Taste/Flavour	30	7.367	0.718	(7.052, 7.681)
Mouthfeel	30	7.767	1.006	(7.452, 8.081)
Aroma/Smell	30	7.867	0.937	(7.552, 8.181)
After Taste	30	7.633	0.850	(7.319, 7.948)
Overall Acceptability	30	7.667	0.922	(7.352, 7.981)

Pooled StDev = 0.872307

7. Inference

According to Table 4, the null hypothesis is accepted as the p-value (0.35) is greater than the alpha value. This proves that there is no difference between the various elements of

the evaluation, still, the aroma/smell seems to be higher with a mean of 7.867. Hence this proves the level of acceptance and likeliness of respondents to foxtail millet jalebi that was been evaluated on the second day

8. Overall Inference of Foxtail Millet Jalebi

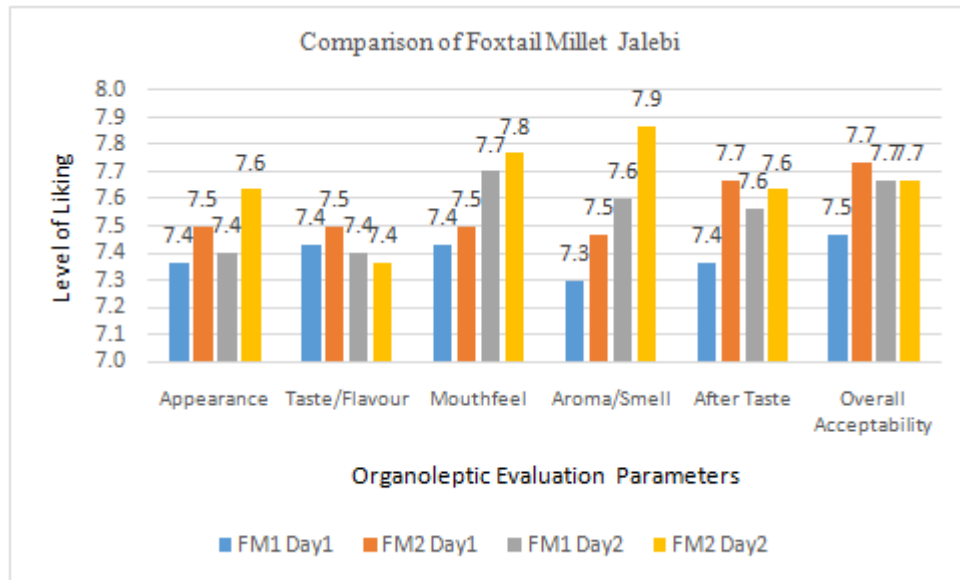


Figure 1: Comparison of Foxtail Millet Jalebi

Organoleptic evaluation was done with 30 respondents in day 1 and the same respondents evaluated on day 2. According to the statistical analysis, the null hypothesis being accepted, there were no significant difference between the groups as the taste of the jalebi were identical. Therefore, we conclude that in terms of organoleptic analysis and level of liking of the respondents, both the proportions used for making foxtail jalebi can be used (refer Figure 1). In order, to analyse from the nutritional point of view, the study has also compared the nutritional values of each sample of jalebi.

9. Finding No.2: Sorghum Millet

10. Comparison between Sorghum Millet

The sorghum millet jalebi was made in 2 proportions. The details of the proportion are,

SM 1 = 10:3:1

SM 2 = 8:5:1

11. One-way Anova - Sorghum Millet Sample 1 (Day1)

H_0 = There is no significant difference between the organoleptic factors of Sorghum millet jalebi (sample 1)

H_1 = There is a significant difference between the organoleptic factors of Sorghum millet jalebi (sample 1)

Table 5: One-way Anova - Sorghum Millet Sample 1 (Day1):

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	0.4944	0.09889	0.24	0.946
Error	174	72.5000	0.41667		
Total	179	72.9944			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.645497	0.68%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.367	0.615	(7.134, 7.599)
Taste/Flavour	30	7.367	0.765	(7.134, 7.599)
Mouthfeel	30	7.467	0.629	(7.234, 7.699)
Aroma/Smell	30	7.333	0.711	(7.101, 7.566)
After Taste	30	7.367	0.615	(7.134, 7.599)
Overall Acceptability	30	7.4667	0.5074	(7.2341, 7.6993)

Pooled StDev = 0.645497

12. Inference

According to Table 5, the null hypothesis is accepted as the p-value (0.94) is greater than the alpha value. The elements of organoleptic evaluation were identical. Though there is no difference yet the mouth feel seems to be higher with a mean of 7.467. Hence this proves the level of acceptance and likeliness of respondents to Sorghum millet jalebi that was been evaluated on the first day.

One-way Anova - Sorghum Millet Sample 1 (Day2)

H_0 = There is no significant difference between the organoleptic factors of Sorghum millet jalebi (sample 1)

H_1 = There is a significant difference between the organoleptic factors of Sorghum millet jalebi (sample 1)

Table 6: One-way Anova - Sorghum Millet Sample 1 (Day2):

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	1.228	0.2456	0.12	0.988
Error	174	352.433	2.0255		
Total	179	353.661			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.42319	0.35%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.133	1.502	(6.620, 7.646)
Taste/Flavour	30	7.233	1.357	(6.720, 7.746)
Mouthfeel	30	7.267	1.363	(6.754, 7.780)
Aroma/Smell	30	7.400	1.354	(6.887, 7.913)
After Taste	30	7.267	1.461	(6.754, 7.780)
Overall Acceptability	30	7.333	1.493	(6.820, 7.846)

Pooled StDev = 1.42319

13. Inference

According to Table 6, the null hypothesis is accepted as the p-value (0.98) is greater than the alpha value and hence no significant difference. Though there is no difference yet the aroma/smell seems to be higher with a mean of 7.4. Hence this proves the level of acceptance and likeliness of respondents to Sorghum millet jalebi that was been evaluated on the second day.

One-way Anova - Sorghum Millet Sample 2 (Day1)

H_0 = There is no significant difference between the organoleptic factors of Sorghum millet jalebi (sample 2)

H_1 = There is a significant difference between the organoleptic factors of Sorghum millet jalebi (sample 2)

Table 7: One-way Anova - Sorghum Millet Sample 2 (Day1):

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	0.561	0.1122	0.14	0.983
Error	174	141.633	0.8140		
Total	179	142.194			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.902211	0.39%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.233	0.774	(6.908, 7.558)
Taste/Flavour	30	7.333	0.884	(7.008, 7.658)
Mouthfeel	30	7.267	1.015	(6.942, 7.592)
Aroma/Smell	30	7.400	0.814	(7.075, 7.725)
After Taste	30	7.267	0.980	(6.942, 7.592)
Overall Acceptability	30	7.333	0.922	(7.008, 7.658)

Pooled StDev = 0.902211

14. Inference

According to Table 7, the null hypothesis is accepted as the p-value (0.98) is greater than the alpha value. Although there is no difference yet the aroma/smell seems to be higher with a mean of 7.4. Hence this proves the level of acceptance and likeliness of respondents to Sorghum millet jalebi that was been evaluated on the first day.

One-way Anova - Sorghum Millet Sample 2 (Day2)

H_0 = There is no significant difference between the organoleptic factors of Sorghum millet jalebi (sample 2)

H_1 = There is a significant difference between the organoleptic factors of Sorghum millet jalebi (sample 2)

Table 8: One-way Anova - Sorghum Millet Sample 2 (Day2):**Analysis of Variance**

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	1.133	0.2267	0.20	0.963
Error	174	199.067	1.1441		
Total	179	200.200			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.06961	0.57%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.300	1.149	(6.915, 7.685)
Taste/Flavour	30	7.367	1.066	(6.981, 7.752)
Mouthfeel	30	7.433	1.073	(7.048, 7.819)
Aroma/Smell	30	7.467	1.008	(7.081, 7.852)
After Taste	30	7.500	1.106	(7.115, 7.885)
Overall Acceptability	30	7.533	1.008	(7.148, 7.919)

Pooled StDev = 1.06961

15. Inference

According to Table 8, the null hypothesis is accepted as the p-value (0.96) is greater than the alpha value and thus a similarity was observed among the variables but the overall acceptability seems to be higher with a mean of 7.533. Hence this proves the level of acceptance and likeliness of respondents to Sorghum millet jalebi that was been evaluated on the second day.

16. Overall Inference of Sorghum Millet Jalebi

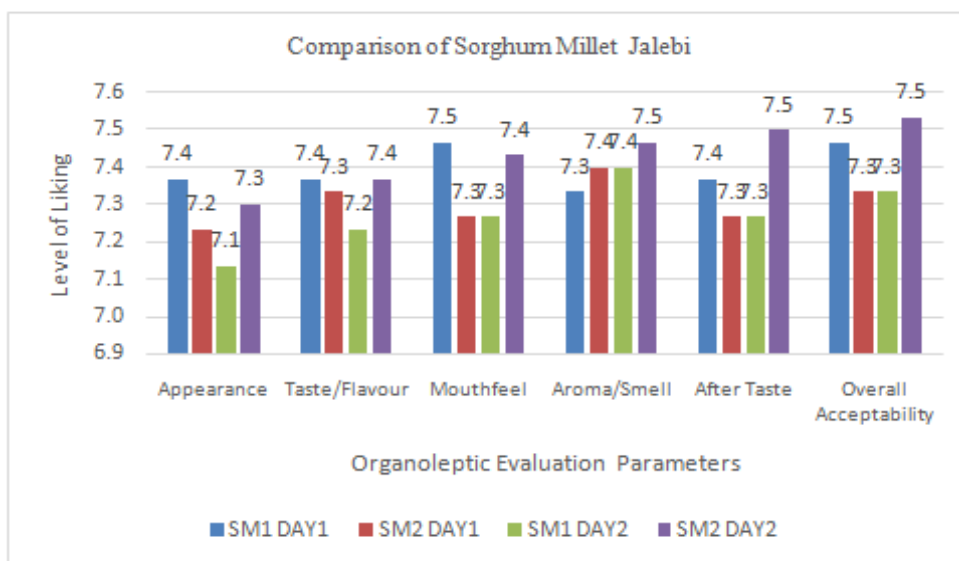


Figure 2: Comparison of Sorghum Millet Jalebi

Organoleptic evaluation was done with 30 respondents in day 1 and the same respondents evaluated on day 2. According to the statistical analysis, the null hypothesis being accepted, there were no significant difference between the groups as the taste of the jalebi were identical. Therefore, we conclude that in terms of organoleptic analysis and level of liking of the respondents, both the proportions used for making sorghum jalebi can be used (refer Figure 2). In order, to analyse from the nutritional point of view, the study has also compared the nutritional values of each sample of jalebi.

17. Finding No.3: Maida -made Jalebi

Comparison between Jalebi made with Maida (Control)

One-way Anova – Maida-made Jalebi (Day1)

H_0 = There is no significant difference between the organoleptic factors of Maida jalebi

H_1 = There is a significant difference between the organoleptic factors of Maida jalebi

Table 9: One-way Anova – Maida-made Jalebi (Day1):

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	1.378	0.2756	0.26	0.936
Error	174	187.267	1.0762		
Total	179	188.644			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.03742	0.73%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.433	1.305	(7.060, 7.807)
Taste/Flavour	30	7.533	1.008	(7.160, 7.907)
Mouthfeel	30	7.467	0.937	(7.093, 7.840)
Aroma/Smell	30	7.600	1.003	(7.226, 7.974)
After Taste	30	7.700	0.915	(7.326, 8.074)
Overall Acceptability	30	7.533	1.008	(7.160, 7.907)

Pooled StDev = 1.03742

18. Inference

According to Table 9, the null hypothesis is accepted as the p-value (0.93) is greater than the alpha value. This proves that there is no significant difference between the various elements of the evaluation. The after taste seems to be higher with a mean of 7.7. Hence this proves the level of acceptance and likeliness of respondents to maida jalebi that was been evaluated on the first day.

One-way Anova – Maida-made Jalebi (Day2)

H_0 = There is no significant difference between the organoleptic factors of Maida jalebi

H_1 = There is a significant difference between the organoleptic factors of Maida jalebi

Table 10: One-way Anova – Maida-made Jalebi (Day2)

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	5	1.028	0.2056	0.11	0.990
Error	174	321.167	1.8458		
Total	179	322.194			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
1.35860	0.32%	0.00%	0.00%

Means

Factor	N	Mean	StDev	95% CI
Appearance	30	7.300	1.343	(6.810, 7.790)
Taste/Flavour	30	7.233	1.331	(6.744, 7.723)
Mouthfeel	30	7.200	1.375	(6.710, 7.690)
Aroma/Smell	30	7.067	1.388	(6.577, 7.556)
After Taste	30	7.233	1.357	(6.744, 7.723)
Overall Acceptability	30	7.133	1.358	(6.644, 7.623)

Pooled StDev = 1.35860

19. Inference

According to Table 10, the null hypothesis is accepted as the p-value (0.99) is greater than the alpha value. Even if there is still no difference, the appearance seems to be higher with a mean of 7.3. Hence this proves the level of acceptance and likeliness of respondents to maida jalebi that was been evaluated on the second day.

20. Overall Inference of Maida-made Jalebi

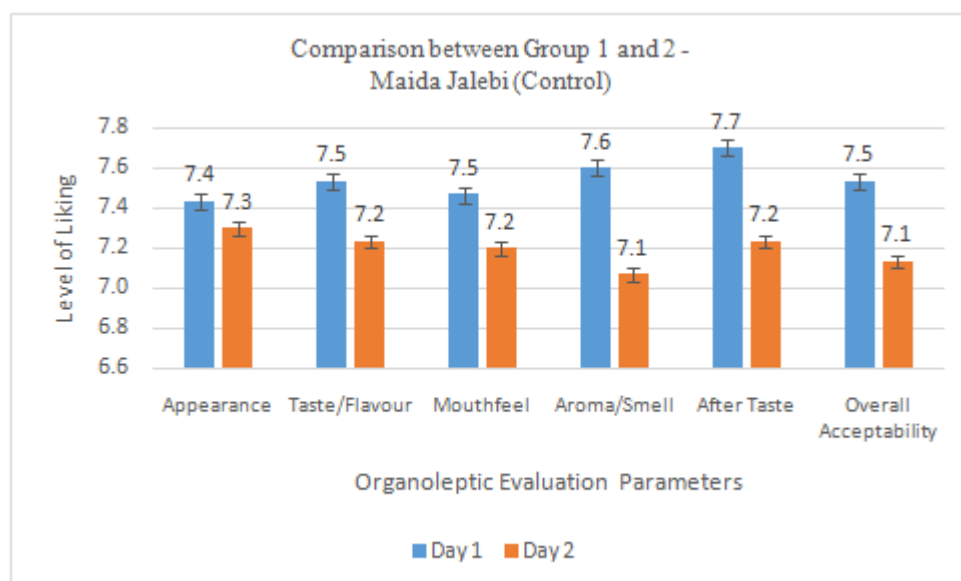


Figure 3: Comparison between Group 1 and 2 Maida Jalebi (Control Group)

The proportion for regular jalebi made from maida and gram flour was 10:1 respectively. Organoleptic evaluation was done with 30 respondents in day 1 and the same respondents evaluated on day 2. According to the statistical analysis and Figure 3, the null hypothesis being accepted and the taste of the jalebi were identical. Yet, the sample tasted on day 1 was found to be better compared to day 2, though the proportion is the same. In order, to analyse from the nutritional point of view, the study has also compared the nutritional values of each sample of jalebi.

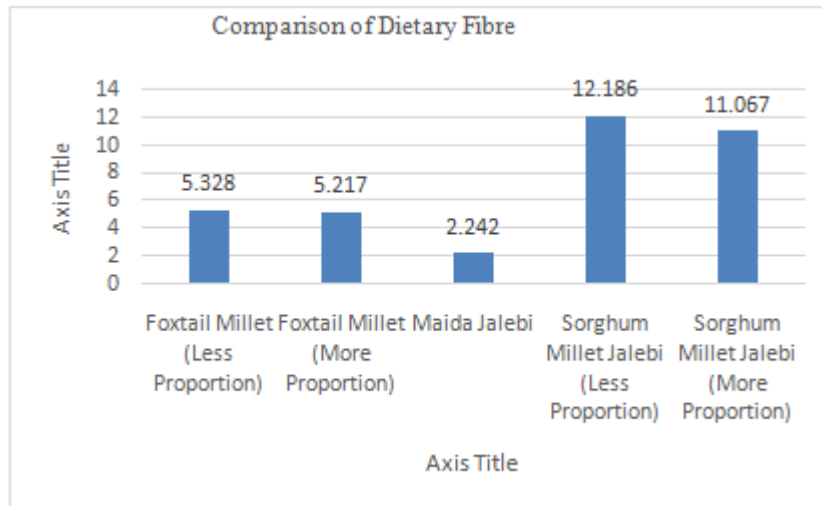


Figure 4: Comparison of Dietary Fibre

A database nutritional composition (Figure 4) indicates that sorghum millet is higher in dietary fibre followed by foxtail millet when compared with maida which was lower in dietary fibre. In regards to the shelf life, as per the observation, the batter was stable under refrigeration for 4 days.

IV. CONCLUSION

According to study findings, it is proved that millet jalebi is highly acceptable by the consumers. People are aware about the health benefits of millet and keen to try new forms of it. When they get a product with the same taste, colour, flavour and texture with more health benefits the liking towards it is found to be more. In addition, when it comes to convenience food the acceptance is more. In times of pandemic, where people are reluctant to try out street foods (Ranka, n.d.), the readymade batter which can be cooked easily at home is highly favoured and accepted. Therefore, the finding of the study proves that in regards to taste, appearance, mouthfeel, aroma, after taste and overall acceptability the jalebi made out of foxtail millet, sorghum millet and maida were identical. This may be the reason for the acceptability between consumers because they get the health benefit without compromising the original taste of the product. As per the database method (Sharma & Niranjana, 2018) of analysing nutritional composition the study emphasized more on dietary fibre component and the same was found to be more in jalebi made out of sorghum millet and foxtail millet; however, maida-made jalebi was low in dietary fibre. Dietary fibre has positive effects when consumed as it helps in decreasing incidents of several diseases (Dhingra et al., 2012). The important aspect of convenience food is the shelf life that improves the aspects of the food

supply (Corradini, 2018) and in relevant to this, the shelf life of the jalebi batter is 4 days under refrigeration. Therefore, the study proves the organoleptic acceptance of millet-made jalebi and purchase behaviour of customers. The findings of the study are in line with the previous studies (Kumar et al., 2018) that states there is awareness between consumers in regards to the health benefits of millets. These studies also have found that though the awareness exist yet there is no increase or slight inclination towards the level of consumption of millets or millet made product. Therefore, this study developed a ready to use food product made out of millet without compromising the taste, colour, aroma and flavour with more health benefits which would, in turn, increase the level of consumption of millets. The contribution of the study to the literature would be that it leads the way to increase the consumption of millets. The research results cannot be generalised for the whole state of country as it focused only on consumers of Bengaluru. A future study can be done in evaluating the nutritional composition of samples with the help of lab analysis which would give a better result on nutritional facts. The study tested only 2 types of millets; a future study can be done with other available millets using the same process. The packaging technique of the product would increase the shelf life of the product by ensuring the food supply safety (Marsh & Bugusu, 2007); a future study can be done on the same.

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