

Sensory Evaluation and Consumer Acceptance of Jaggery Based Minor Millet (Foxtail and Little Millet) Biscuits

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ABSTRACT: Processed foods demand is increasing in developing countries like India. Bakery products like biscuits command wide fame among both urban and rural people. These products are the best vehicles to incorporate small millets to enhance their nutritional value. Incorporation of jaggery in food products instead of sugar leads to increase in the nutrient content. Hence, an attempt was made to prepare jaggery based minor millet biscuits with acceptable sensory attributes. The present study was conducted for formulating biscuits by replacing maida with different percentages of foxtail millet and little millet flour. Based on the sensory evaluation 75% millet incorporated biscuits were selected for further product development. Then sugar was replaced with jaggery in different ratios in the selected millet biscuits. The 100% (FJ14 and LJ14) jaggery incorporated biscuits were selected by semi trained panel members and subjected for consumer acceptance. Consumer acceptances were collected from 75 respondents. Results found that 100% respondents felt millet biscuits were highly nutritious. Most of the respondents (98.3%) preferred jaggery over sugar and mentioned the reasons for replacing sugar with jaggery as its nutritive value (56%) and health consciousness (42.7%). These jaggery based millet biscuits are healthy, attractive and can attract a large number of consumers. Millet-based products provide a healthy alternative to malnutrition and lifestyle diseases.

Keywords: Minor millets, biscuits, jaggery, sensory evaluation, consumer evaluation.

INTRODUCTION

Minor millets are warm-season cereals grown primarily in Asia and Africa's semi-arid tropical regions using rainfed farming methods (Rai *et al.*, 2008). Minor millets includes kodo millet (*Paspalum scrobiculatum*), barnyard millet (*Echinochloa frumentacea*), little millet (*Panicum sumatranse*), foxtail millet (*Setaria italica*), proso millet (*Panicum miliaceum*) and finger millet (*Eleusine coracana*). These millets are rich in dietary fiber, energy, vitamins, several minerals like micronutrients such as iron, calcium and zinc, insoluble dietary fiber and phytochemicals, have antioxidant properties and are considered as "Nutri-cereals" (Bouis, 2000; Singh, 2016). They are rich in compounds that help against several chronic diseases like Ischemic stroke, cardiovascular diseases, cancers, obesity and Type II diabetes (Jones, 2006; Ren *et al.*, 2018).

Minor millets like foxtail millet and little millet have good storage stability and are of higher nutritional value; a rich sources of energy, protein, B complex vitamins, minerals and fiber. Little millet is a good source of iron (9.30 mg/100 g) whereas foxtail millet is rich in protein and phosphorus (Gopalan *et al.*, 2009; Ambati and Sucharitha 2019). In these millets, not only is the biological value of digestible protein higher than rice and wheat; but these also contain seven of the eight essential amino acids, which cannot be synthesized by the human body (Liang *et al.* 2010).

One of the largest markets in the world is snacks food market. Bakery industry occupies a wide area among the snacks food market, and the demand for bakery products is increasing at a rate of 10.07% annually (Kamaljit *et al.*, 2010). According to research, refined wheat flour contains less protein, fat, minerals, vitamins, and dietary fibre than whole wheat flour.

(Oghbaei and Prakash 2016). Comparatively refined wheat flour also contains fewer nutrients than millets (Gopalan *et al.*, 2009). Bakery products like biscuits and cookies have a long shelf life, are generally accepted by all age groups, and these are readily available almost everywhere (Turner *et al.*, 2010; Popov-Raljic *et al.*, 2013). The main ingredients in cookies preparation are refined wheat flour, fat and sugar (Paret and Delcour 2008). In comparison to white sugar, substituting jaggery for sugar is healthier because jaggery contains minerals, protein, glucose and fructose while having higher calories. It has moderate amount of calcium, phosphorous and zinc (Pattnayak *et al.*, 2004). The main objective of the present study was to prepare biscuits through replacement of wheat flour with minor millet flour (foxtail and little millet) and replacing sugar with jaggery to improve the sensory quality.

MATERIALS AND METHODS

Millets and all the required raw materials like wheat flour, sugar powder, baking powder, milk powder, ammonium bicarbonate and packaging materials etc. were procured from Millet Processing and Incubation Centre (MPIC) and local markets of Hyderabad.

Procedure for making biscuits: All the raw materials were weighed. Flour was sieved with powdered sugar, milk powder and baking powder. During the creaming of fat and sugar, dry ingredients were added to the cream by sieving. Remaining ingredients like ammonium and vanilla essence were added and kneaded together to make soft dough. Sheeting of dough was done using roller pin followed by moulding (cutting of sheets by using desirable shape cutter). Moulded biscuits were baked at 160° C for 10 min in preheated oven at 170° C for 15 min. Biscuits were cooled at 27° C for 30 min and were packed and stored in polypropylene pouches. The stepwise process chart for the preparation of biscuits is mentioned in Fig. 1.

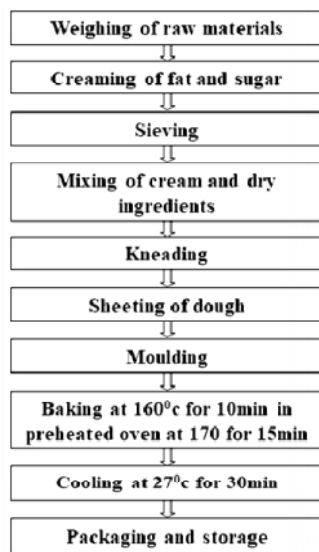


Fig. 1. Flow chart for the preparation of biscuits.

Standardization of millet biscuits with sugar: Biscuit dough was prepared by replacing maida with millet flour (foxtail and little separately) in various proportions (25%, 50%, 75% and 100%).

Standardization of jaggery based minor millet biscuits: In the selected accepted formulation, sugar was replaced with jaggery in various proportions (25%, 50%, 75% and 100%).

Sensory evaluation. A semi-trained panel of 15 members from PGRC (Post Graduate Research Center), PJTSAU (Professor Jayashankar Telangana State Agricultural University) using 9-point hedonic scale evaluated the developed millet biscuits for appearance, colour, crispiness, hardness, roughness, denseness, taste, after taste and overall acceptability. Scores were based on a hedonic scale of 1 to 9 where: 1= Disliked extremely (very bad) and 9= Liked extremely (excellent) (Meilgaard *et al.*, 1999). In sensory evaluation lab samples were coded, presented in plates, and kept in individual booths.

Consumer evaluation. Consumer evaluation of jaggery cookies was carried out with 75 consumers with different age groups of consumers. Structure questionnaire was used for consumer acceptance studies where respondents had to taste the product and indicate their overall liking by using a 5-point hedonic scale, besides, demographic information (age, gender, location and education) was also collected (Skubic *et al.*, 2018).

RESULTS AND DISCUSSION

Sensory quality characteristics of jaggery based minor millet biscuits:

The results of sensory evaluation were statistically analysed and data was presented in Table 1. The highest sensory scores were given to control sample for all the attributes but, among all the formulations of millet biscuit with sugar, highest score for appearance was given to FS11 (8.53) and LS11 (8.53). Colour value ranged from 7.47 in LS14 to 8.48 in FS11. Regarding the texture attribute, the mean sensory scores for crispiness was highest in FS12 (8.00) and lowest in LJ13 (7.13). Highest score for hardness was given to FS11 (8.00) while lowest score was given to FS12 (7.53). Roughness scores decreased with increase in the millet incorporation in both foxtail and little millet formulations. Denseness was mostly similarly in all formulations. The highest mean scores for taste were given to CS01 followed by FS11, FS12, FS13 and FS14 whereas in for little millet it decreased as LS11>LS12>LS13>LS14. The mean sensory scores for overall acceptability was high in FS11 (8.60), LS11 (8.60) and lowest score was found in FS14 (7.73) and LS14 (6.66). Based on the sensory evaluation up to 75% millet biscuits were given acceptable scores so the formulations were selected for further incorporation of jaggery.

The mean sensory scores for jaggery incorporated millet-based biscuits are stated in Table 2. The score for

colour was high in FJ11 (8.46) and low in LJ13 (7.73). Appearance ranged from 8.73(FJ14) to 7.83(LS13) among all the formulations. The mean scores of texture decreased with the incorporation of jaggery and millet. The mean sensory scores for taste ranged from 7.93 (FJ12) to 7.73 (FJ13 and FJ14). Overall acceptability score was high in FJ14 (7.66) and LJ14 (7.8). Among all the selected formulations of millet biscuits, FJ14 and LJ14 were best accepted and so these were selected for the further consumer evaluation.

The mean sensory scores of foxtail millet biscuits and little millet biscuits and along with control biscuits are presented in Fig. 2 and 3. Results show that the control biscuits with 100% maida and 100% sugar (CS01) were highly acceptable among the all formulation of foxtail millet and little millet biscuit, whereas FS13 and LS13 (75% millet flour and 100% sugar) and FJ14 and LJ14 (75% millet flour and 100% jaggery) were also found acceptable by the semi-trained panelists.

Consumer evaluation: The consumers were provided with the jaggery based millet biscuits for tasting and the responses were recorded in structured questionnaire. In the consumers 64% respondents were females and remaining 38% respondents were males with age group

of 12 to 68 years. Most of the respondent's occupation was students, employees and others.

Results showed that 100% respondents felt millet biscuits were more nutritious. Very few respondents (1.3%) did not show interest in purchasing these biscuits. Rest 97.3% of them were interested in purchasing these biscuits. Most of the respondents (98.3%) preferred jaggery over sugar. Also, most of the respondents mentioned the reasons for replacing sugar with jaggery as its nutritive value (56%) and health consciousness (42.7%) (Fig. 4). The cost of the biscuits was appropriate for 73.3% of consumers (40/- per 100g) whereas 20% of respondents mentioned that the price was high and their recommendations for the cost of biscuits was 30Rs/- per 100g. (Fig. 5). Most of the respondents mentioned that they want to purchase these biscuits weekly once (49%) (Fig. 6). Based the nutritional and health claims, all respondents were willing to buy these biscuits.

A similar study conducted by Mahalaxmi and Hemlatha (2018) to develop millet based cookies by incorporating jaggery showed comparable results. As a result of sensory and consumer evaluations, the millet-based cookies with organic jaggery replacing sugar in a ratio of 75:25 showed highly acceptable results.

Table 1: Sensory analysis of millet biscuits with sugar.

Sample	Appearance	Colour	Texture				Taste	After Taste	Overall Acceptability
			Crispiness	Hardness	Roughness	Denseness			
CS01	8.73 ^d ±0.12	8.73 ^d ±0.11	8.06 ^d ±0.18	7.93 ^d ±0.18	7.80 ^d ±0.22	8.13 ^d ±0.13	8.60 ^d ±0.13	8.20 ^d ±0.20	8.60 ^d ±0.13
Foxtail millet biscuits									
FS11	8.53 ^{cd} ±0.19	8.48 ^{cd} ±0.13	8.00 ^d ±0.21	8.00 ^d ±0.23	7.93 ^{cd} ±0.22	7.86 ^{cd} ±0.25	8.26 ^{cd} ±0.18	7.73 ^{cd} ±0.24	8.46 ^{cd} ±0.13
FS12	8.27 ^{abc} ±0.23	7.93 ^{ab} ±0.15	7.53 ^{bcd} ±0.37	7.53 ^{bcd} ±0.38	7.73 ^{cd} ±0.22	7.80 ^{cd} ±0.22	7.86 ^{de} ±0.27	7.20 ^{cd} ±0.31	8.06 ^{cd} ±0.20
FS13	8.20 ^{ab} ±0.20	8.00 ^{bc} ±0.19	7.60 ^{bcd} ±0.27	7.80 ^{cd} ±0.27	7.73 ^{cd} ±0.28	7.80 ^{cd} ±0.28	7.66 ^{cd} ±0.23	7.13 ^{cd} ±0.36	7.66 ^{bc} ±0.21
FS14	7.93 ^a ±0.21	7.80 ^{ab} ±0.22	7.93 ^{cd} ±0.28	7.80 ^{cd} ±0.29	7.53 ^{abc} ±0.29	7.80 ^{cd} ±0.22	7.53 ^a ±0.29	7.06 ^{cd} ±0.37	7.73 ^{bc} ±0.26
Little millet biscuits									
LS11	8.07 ^{ab} ±0.25	8.00 ^{bc} ±0.27	7.86 ^{bcd} ±0.30	7.53 ^{bcd} ±0.33	7.60 ^{bcd} ±0.36	7.80 ^{cd} ±0.31	8.13 ^{de} ±0.16	7.40 ^{cd} ±0.31	8.20 ^{cd} ±0.22
LS12	8.20 ^{ab} ±0.22	7.67 ^{ab} ±0.23	7.33 ^{ab} ±0.31	7.27 ^{abc} ±0.35	7.26 ^{abc} ±0.30	7.33 ^{ab} ±0.33	7.46 ^{ab} ±0.19	6.60 ^{bc} ±0.29	7.46 ^b ±0.19
LS13	7.93 ^a ±0.21	7.67 ^{ab} ±0.21	7.13 ^a ±0.32	6.87 ^a ±0.36	7.13 ^{ab} ±0.27	7.33 ^{ab} ±0.29	7.00 ^{ab} ±0.22	6.33 ^{ab} ±0.29	6.93 ^a ±0.24
LS14	7.80 ^a ±0.17	7.47 ^a ±0.23	7.40 ^{abc} ±0.28	7.06 ^{ab} ±0.37	7.00 ^a ±0.41	7.13 ^{ab} ±0.32	6.73 ^a ±0.24	5.40 ^a ±1.06	6.66 ^a ±0.25
Mean	8.185	7.97	7.65	7.53	7.52	7.66	7.69	7.00	7.75
S.E	0.070	0.07	0.09	0.10	0.09	0.09	0.08	0.16	0.08
C.D	0.497	0.57	0.81	0.89	0.82	0.75	0.61	1.27	0.59
C.V%	8.387	9.89	14.70	16.42	15.21	13.62	11.08	25.18	10.58

Note: Values are expressed as mean ± standard deviation of fifteen determinations

Means within the same column followed by a common letter do not differ significantly at (p = 0.05)

CS01: Control biscuit with 100% maida and sugar

FS11: Foxtail millet biscuit with 25% foxtail millet flour

FS12: Foxtail millet biscuit with 50% foxtail millet flour

FS13: Foxtail millet biscuit with 75% foxtail millet flour

FS14: Foxtail millet biscuit with 100% foxtail millet flour

LS11: Little millet biscuit with 25% little millet flour

LS12: Little millet biscuit with 50% little millet flour

LS13: Little millet biscuit with 75% little millet flour

LS14: Little millet biscuit with 100% little millet flour

Table 2: Sensory analysis of millet biscuits sugar replaced with jiggery.

Sample	Appearance	Colour	Texture				Taste	After Taste	Overall Acceptability
			Crispiness	Hardness	Roughness	Denseness			
Foxtail millet biscuits									
FS13	8.66 ^d ±0.12	8.53 ^c ±0.19	8.20 ^{cd} ±0.20	7.86 ^b ±0.21	8.60 ^{ab} ±0.13	8.13 ^c ±0.23	8.13 ^d ±0.21	7.93 ^a ±0.20	7.73 ^c ±0.18
FJ11	8.73 ^{cd} ±0.11	8.46 ^{de} ±0.13	7.86 ^{bc} ±0.19	7.66 ^b ±0.21	8.53 ^b ±0.13	8.13 ^c ±0.19	7.80 ^{cd} ±0.14	7.60 ^a ±0.19	7.40 ^c ±0.21
FJ12	8.20 ^{bcd} ±0.20	8.26 ^{bc} ±0.15	8.00 ^{abc} ±0.13	7.80 ^{ab} ±0.22	8.40 ^{ab} ±0.19	8.33 ^{abc} ±0.15	7.93 ^{abc} ±0.11	7.80 ^{cd} ±0.17	7.46 ^{ab} ±0.23
FJ13	8.20 ^{abc} ±0.17	8.00 ^{bc} ±0.21	7.66 ^{ab} ±0.18	7.93 ^b ±0.20	8.60 ^{ab} ±0.13	8.20 ^{bc} ±0.24	7.73 ^{ab} ±0.24	7.53 ^{bc} ±0.19	7.60 ^{ab} ±0.16
FJ14	8.06 ^{ab} ±0.18	8.13 ^{ab} ±0.19	7.86 ^{abc} ±0.27	7.73 ^b ±0.28	8.26 ^{ab} ±0.18	8.00 ^{abc} ±0.32	7.73 ^{abc} ±0.31	7.20 ^{bc} ±0.35	7.66 ^{ab} ±0.31
Little millet biscuits									
LS13	7.93 ^{cd} ±0.22	8.00 ^{de} ±0.21	7.86 ^d ±0.21	7.60 ^b ±0.25	8.66 ^c ±0.12	8.00 ^{abc} ±0.19	7.53 ^{bcd} ±0.19	7.46 ^{cd} ±0.13	7.60 ^{bc} ±0.21
LJ11	8.13 ^{abc} ±0.13	8.00 ^{cd} ±0.21	7.86 ^{cd} ±0.19	7.66 ^b ±0.23	8.13 ^b ±0.16	8.06 ^c ±0.20	7.73 ^{bc} ±0.15	7.53 ^{cd} ±0.19	7.26 ^{bc} ±0.28
LJ12	8.53 ^{abc} ±0.13	8.33 ^{abc} ±0.15	7.86 ^{ab} ±0.19	8.06 ^{ab} ±0.22	8.26 ^{ab} ±0.15	8.00 ^{abc} ±0.16	7.73 ^a ±0.11	7.80 ^{ab} ±0.10	7.73 ^a ±0.20
LJ13	8.20 ^{ab} ±0.20	7.73 ^{ab} ±0.24	7.13 ^a ±0.36	7.06 ^a ±0.37	7.33 ^{ab} ±0.15	7.40 ^{ab} ±0.30	6.66 ^a ±0.30	6.26 ^a ±0.26	6.40 ^{ab} ±0.25
LJ14	8.53 ^a ±0.16	8.53 ^a ±0.13	7.80 ^{ab} ±0.17	8.0 ^{ab} ±0.21	8.13 ^a ±0.19	8.13 ^a ±0.19	7.60 ^a ±0.13	7.86 ^a ±0.16	8.13 ^{bc} ±0.19
Mean	8.20	8.01	7.93	7.83	7.86	7.81	8.04	7.14	8.07
S.E	.0651	.0627	.0653	.0919	.0676	.0658	.0574	.0983	.0606
C.D	0.549	0.479	0.547	0.810	0.564	0.565	0.487	0.793	0.511
C.V%	9.272 %	8.287 %	9.568 %	14.324 %	9.948 %	10.031 %	8.401 %	15.397 %	8.784 %

Note: Values are expressed as mean ± standard deviation of fifteen determinations

Means within the same column followed by a common letter do not differ significantly at (p = 0.05)

FS13: Foxtail millet biscuit with 75% foxtail millet flour and 100% sugar

FJ11: Foxtail millet biscuit with 25% jaggery

FJ12: Foxtail millet biscuit with 50% jaggery

FJ13: Foxtail millet biscuit with 75% jaggery

FJ14: Foxtail millet biscuit with 100% jaggery

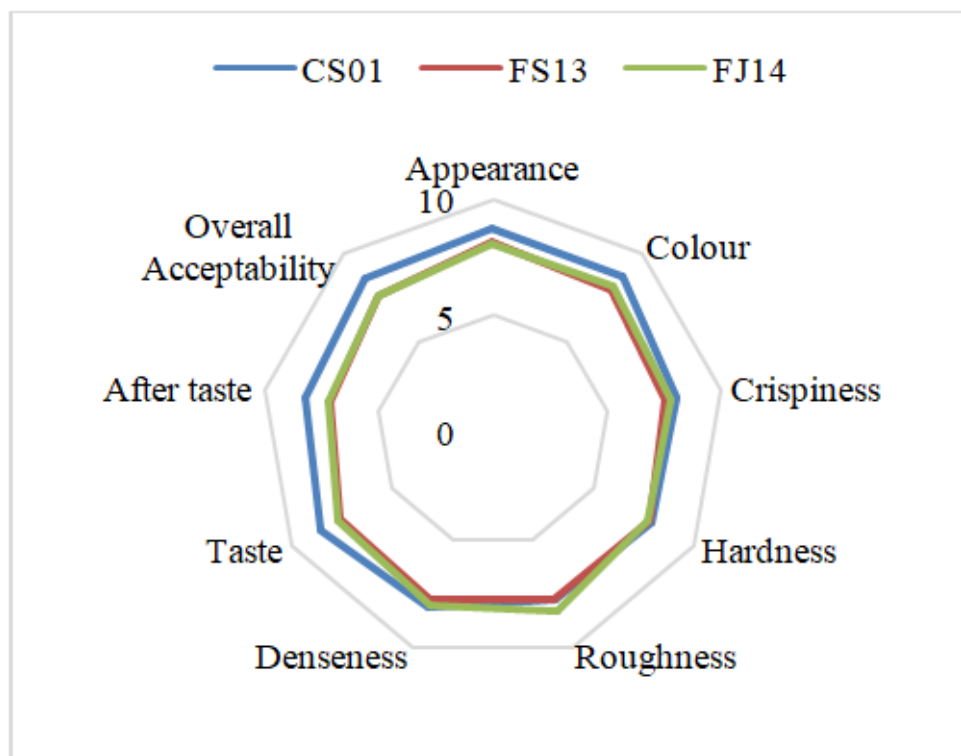
LS13: Little millet biscuit with 75% little millet flour and 100% sugar

LJ11: Little millet biscuit with 25% jaggery

LJ12: Little millet biscuit with 50% jaggery

LJ13: Little millet biscuit with 75% jaggery

LJ14: Little millet biscuit with 100% jaggery

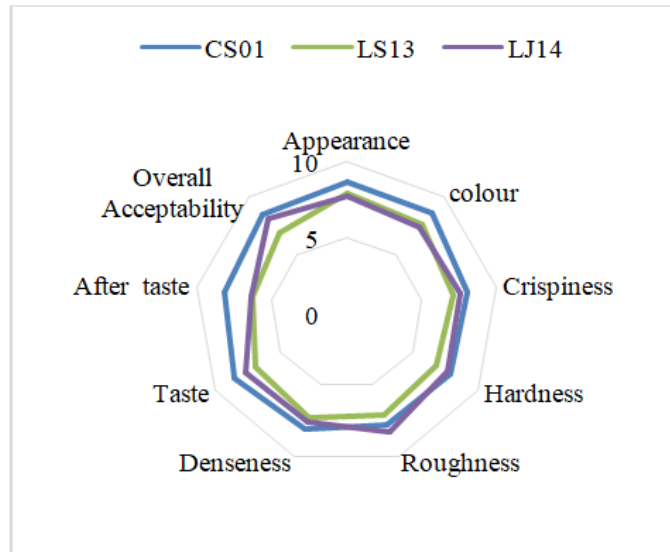


CS01: Control biscuit with 100% maida and sugar

FS13: Foxtail millet biscuit with 75% foxtail millet flour and 100% sugar

FJ14: Foxtail millet biscuit with 100% jaggery

Fig. 2. Mean sensory scores of foxtail millet biscuits.



CS01: Control biscuit with 100% maida and sugar
 LS13: Foxtail millet biscuit with 75% foxtail millet flour and 100% sugar
 LJ14: Foxtail millet biscuit with 100% jaggery

Fig. 3. Mean sensory scores of little millet biscuits.

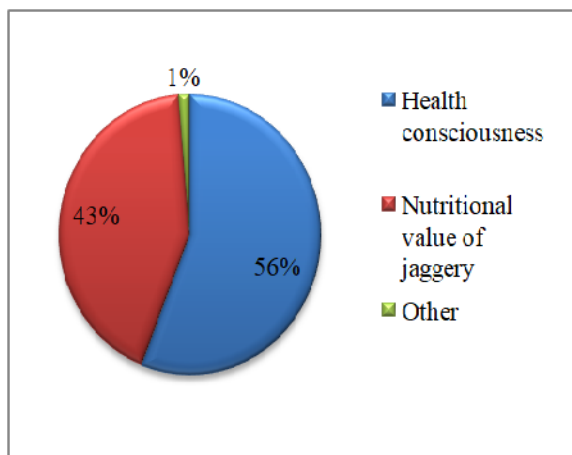


Fig. 4. Reason for preferring jaggery over sugar.

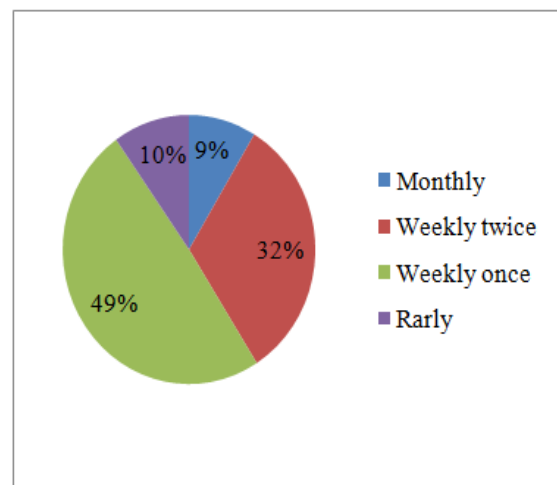


Fig. 6. Consumer's purchasing behaviour of the given products.

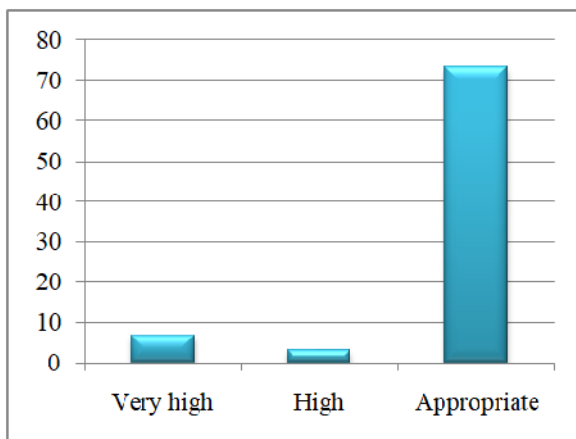


Fig. 5. Consumer's response over mentioned cost of the product.

CONCLUSION

In the current study, 75 % millet incorporated biscuits were accepted. The jaggery incorporated biscuits also received good sensory scores in every attribute for all the prepared formulations. Based on the sensory data, the final selected formulations were containing 100% of jaggery in place of sugar. Consumer acceptability of final products was high and people showed interest to purchase jaggery based millet biscuits. The consumers today are conscious about health and searching for newer products which satisfy both taste and health. Thus, these jaggery incorporated millet biscuits are nutritious as well as can also prove to be beneficial in preventing malnourishment among children and adults.

FUTURE SCOPE

The study can provide a basis for developing more millet-based products due to the high consumer acceptance of the developed products. Aside from that, these type of products are also capable of performing well in a competitive market.

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Conflict of Interest. None.

REFERENCES

- Ambati, K. and Sucharitha, K. V. (2019). Millets-review on nutritional profiles and health benefits. *International Journal of Recent Scientific Research*, 10(7), 33943-33948.
- Bouis, H. E. (2000). Enrichment of food staples through plant breeding: a new strategy for fighting micronutrient malnutrition. *Nutrition*, 16, 701-704.
- Chambers, E. (1994). Conducting Consumer Sensory Evaluation Studies. Reciprocal Meat Conference Proceedings. The Sensory Analysis Center, Justin Hall, Kansas State University Manhattan.
- Gopalan, C., Rama Sastri B. V. and Balasubramanian S. C. (2009). Nutritive Value of Indian Foods. National Institute of Nutrition, ICMR, Hyderabad.
- Jones, J. M. (2006). Grain-based foods and health cereals. *Cereal Foods World*, 51, 108-113.
- Kamalji, K., Baljeet, S. and Amarjeet, K. (2010). Preparation of bakery products by incorporating Pea flour as a functional ingredient. *American Journal of Food Technology*, 5(2), 130-135.
- KosSkubic, M., Erjavec, K., Ule, A and Klopčič, M. 2018. Consumers' hedonic liking of different labeled and conventional food products in Slovenia. *Journal of Sensory Studies*. 33(5), 1-8.
- Liang, S., Yang, G. and Ma, Y. (2010). Chemical characteristics and fatty acid profile of foxtail millet bran oil. *Journal of the American Oil Chemists' Society*, 87(1), 63-67.
- Mahalaxmi, B. K. and Hemalatha, S. (2018). Functional and nutritional characteristics of organic jaggery millet cookies. *International Journal of Food Science and Nutrition*, 3(5), 171-177.
- Meilgaard, M., Civile, G. V. and Carr, B. T. (1999). Sensory evaluation technique. 3rd ed. CRC press, Boca Raton.
- Oghbaei, M and Prakash, J. (2016). Effect of primary processing of cereals and legumes on its nutritional quality: a comprehensive review. *Food and Agriculture*, 1-14.
- Pattnayak, P. K. and Misra, M. K. (2004). Energetic and economics of traditional gur preparation: a case study in Ganjam district of Orissa, India. *Biomass and Bioenergy*, 26(1), 79-88.
- Paret, B. and Delcour, J. A. (2008). The role of wheat flour constituents, sugars and fat in low moisture cereal based products: A review on sugar -snap cookies. *Critical Review of Food Science and Nutrition*, 48, 824-839.
- Popov-Raljić, J. V., Martilović, J. S., Lalić-Petronijević, J. G., Kevresan, Z. S. and Demin, M. A. (2013). Sensory and color properties of dietary cookies with different fiber sources during 180 days of storage. *Hemijaska Industrija*, 67, 123-134.
- Rai, K. N., Gowda, C. L. L., Reddy, B. V. S. and Sehgal, S. (2008). Adaptation and potential uses of sorghum and pearl millet in alternative and health foods. *Food Sciences*, 7, 340-352.
- Ren, X., Yin, R., Hou, D., Xue, Y., Zhang, M., Diao, X., Zhang, Y., Wu, J., Hu, J., Hu, X. and Shen, Q. (2018). The glucose-lowering effect of foxtail millet in subjects with impaired glucose tolerance: A self-controlled clinical trial. *Nutrients*, 10(10), 1509.
- Singh, S. E. (2016). Potential of millets; Nutrient composition and health benefits. *Journal of Scientific and Innovative Research*, 5(2), 46-56.
- Turner, S. A., Luszczynska, A., Warner, L. and Schwarzer, R. (2010). Emotional and uncontrolled eating styles and chocolate chip cookie consumption, A controlled trial of the effects of positive mood enhancement. *Appetite*. 54, 143-149.

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