J. Farm Sci., 35(2): (266-271) 2022

RESEARCH PAPER

Development of proso millet (*Panicum miliaceum*) based *vada* mix

NANDINI D, PUSHPA BHARATI AND SAROJANI KARAKANNAVAR

Department of Food Science and Nutrition, College of Community Science, Dharwad
University of Agricultural Sciences, Dharwad - 580 005, Karnataka, India
E-mail: nandinidashyal2040@gmail.com

(Received: February, 2022 ; Accepted: May, 2022)

Abstract: Proso millet is India's oldest cultivated millet and significant minor crop. The millet is suitable for developing ready to cook mixes, snack mixes, snack foods and many products like *dosa, idli, laddo*, *dahi*, doughnut, puffed grains and *chakli etc*. *Vada* is a type of savory fried snack known from antiquity and is a main breakfast and snack item at home and a street food in India. The study was attempted to develop millet based *vada* mix by replacing sorghum with proso millet. The proso millet *vada* mix was converted to *vada* and evaluated sensorially. Results indicated that 90 per cent proso millet incorporated *vada* received highest scores for appearance (8.50), color (8.60), flavor (8.70), taste (8.50), texture (8.70) and over all acceptability (8.60) with acceptability index of 95.55 per cent. With incorporation of proso millet the acceptability of *vada* was better than 100 per cent sorghum *vada*. *Vada* prepared with dough rested for one hour had highest scores for appearance (7.90), color (7.70), flavor (7.80), taste (7.50), texture (7.80) and overall acceptability was 7.70 with acceptability index of 85.18. Dough rested over night, one hour and not rested received statistically similar scores for all sensory parameters evaluated.

Key words: Consumer acceptability, Dough resting time, Millets, Proso millet

Introduction

Millets are the world's sixth most-produced cereal grain. In comparison to major grains, millet possesses pest and disease tolerance, a short growing season, and resistant to drought (Devi *et al.,* 2011). Millets are also known as husked grains because they have hard and undigestible seed coat. These can be classified into exploited and underutilized crops; while foxtail, little, finger and pearl millets are considered totally exploited; barnyard, kodo, proso and browntop millets are the examples of under-exploited minor millets. Millets were discovered to have a high nutrient content that was comparable fine grains such as wheat and rice, in addition to their farming advantages (Parameswaran and Sadasivam, 1994). Proso millet is India's oldest cultivated millet and a significant minor crop. Proso millet has low Glycemic Index (GI), making it a good food for people with type 2 diabetes and Cardio Vascular Disease (CVD). Proso millet is suitable for developing ready to cook mixes (Madhushri, 2020; Zodge *et al.,* 2020), and keeping proso millet as base, many products are developed such as nutri beverage (Ranaganna *et al.,* 2013), proso millet *dahi* (Rajani *et al.,* 2013), proso millet biscuits (Anandito *et al.,* 2018), puffed proso millet grains (Pilat *et al.,* 2016), proso millet doughnut (Satish Kumar *et al.,* 2018), proso millet *chakli* (Sarojani *et al.,* 2021).

Vada is a type of savory fried snack known from antiquity and is a main breakfast and snack item at home and a street food in India. Sorghum *vada* is a kind of traditional fried food prepared in northern part of Karnataka. It is prepared with cereals, legumes and other spices. Convenience foods like chutney powders, pickles, ready snacks can be enjoyed right away, while others like papads, *etc.,* require minimum processing like reconstitution, heating, or thawing before consumption. Nowadays women are working and involved in remunerative jobs, hence not finding enough time for elaborate cooking in kitchen. The present study was thus undertaken with an objective to develop proso millet based *vada* mix by replacing sorghum in jowar *vada* recipe.

Material and methods

Present study was conducted in Department of Food Science and Nutrition, College of Community Science, University of Agricultural Sciences, Dharwad in the year 2021. Proso millet and other ingredients were procured from local market of Dharwad in one lot. The traditional recipe for the preparation of sorghum *vada* was selected which included sorghum, wheat, bengal gram dhal and spices.

Trials were undertaken to formulate proso millet based *vada* mix by varying the quantity of proso millet (10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 %). Sorghum was replaced with proso millet. Different grains were blended and milled to get the mix. The mix without proso millet served as control.

Preparation of *vada* with the mix: Proso millet *vada* mix of 35g was transferred to a bowl, mixed with salt and paste of coriander leaves, green chilli and cumin seeds. Dough was prepared with cold water and rested. The dough was kneaded and made into small balls. The balls were flattened into the shape of puri and deep fried in refined groundnut oil on medium flame till golden brown.

Standardization of method of preparation *vada*

Method of preparation of proso millet *vada* was standardized by resting the dough for different durations (0, 1, 2, 3, 4 hours and overnight). The dough characteristics like water required for dough preparation and weight of dough were recorded. The *vada* were characterized in terms of weight, expansion, oil absorption and yield.

The *vada* were coded and subjected to descriptive and sensory evaluation by a panel of judges from the Department of Food Science and Nutrition using nine-point hedonic scale. The *vada* was evaluated for color, appearance, flavor, taste, texture and overall acceptability. Acceptability indices were calculated by summing the scores obtained for all sensory parameters divided by 54 and multiplying by 100.

Consumer acceptability

Prepared proso millet *vada* (1 each) was given to 150 consumers including students, teaching, nonteaching staff and general public of Dharwad. FACT scale was given to every consumer and was instructed to consume complete *vada* and give their opinion in the scale acceptability score which was calculated by dividing the sum of product of the responses and score with total number of respondents.

Data were analyzed and interpreted by one-way ANOVA (Analysis of Variance) using SPSS (Version 20) software.

Results and discussion

Ten formulations were tried wherein sorghum was replaced by proso millet at 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100 per cent, keeping wheat and Bengal gram dhal constant (Table 1). The mix without proso millet served as control.

Table 1. Formulation of proso millet based *vada* mix

Proportion of PM (%)	Sorghum (%)	Proso millet (%)	Wheat (%)	Bengal gram dhal (%)
0 (Control)	55.00	0	30	15
10	49.50	5.50	30	15
20	44.00	11.00	30	15
30	38.50	16.50	30	15
40	33.00	22.00	30	15
50	27.50	27.50	30	15
60	22.00	33.00	30	15
70	16.50	38.50	30	15
80	11.00	44.00	30	15
90	5.50	49.50	30	15
100	0	55.00	30	15

Note: PM: Proso Millet

Physical characteristics of proso millet incorporated dough and *vada*

Physical characteristics of dough and *vada* are shown in Table 2. Control formulation required 68 ml of water for 100g flour mix, whereas, 100 percent proso millet required 75 ml per 100g. However, it was noted that 10 to 20, 30 to 50 and 60 to 90 per cent incorporation of proso millet required 71, 75 and 77 ml of water per 100g respectively. As the incorporation of proso millet increased, water required to get dough of required consistency also increased. Millets being rich source of fiber might have required more water. Similar results were observed in the study of Sarojani *et al.,* 2021, while developing proso millet *chakli.*

Correspondingly, the weight of dough was 168 and 179 g for zero and 100 per cent incorporation of proso millet. As the per cent incorporation of proso millet increased the weight of dough also increased wherein weight of dough was 171, 175 and 177g for 10 to 20, 30 to 50 and 60 to 90 per cent incorporation of proso millet. Constant amount (2.90) of oil was absorbed by each *vada* which was prepared with 0, 10, 20, 30, 40, 50 and 60 per cent of proso millet. Whereas, *vada* prepared with 70, 80, 90 and 100 per cent incorporation of proso millet absorbed 3.09 ml of oil. With increase in proso millet proportion weight of *vada* and oil absorption increased. This could be due to higher oil holding capacity of the millet and replacement of moisture by oil during frying (Gazmuri and Bouchon, 2009). Similar results were observed in the study of Sarojani *et al.,* 2021, while developing proso millet *chakli*. Diameter of *vada* before frying was 6.3cm in all the formulations which increased to 6.5 (control, 70 and 80 % incorporation) to 6.7 (30 and 40 % incorporation) with expansion of 2 and 4 mm respectively.

Descriptive characteristics of proso millet incorporated dough and *vada*

Descriptive characteristics of proso millet incorporated dough and *vada* are given in Table 3. Dough prepared with control formulation was easily rollable, non-sticky to handle and was stretchable with soft texture. *Vada* prepared with this

Table 2. Physical characteristics of proso millet incorporated dough and *vada*

Proportion of PM (%)	Dough characteristics		*Vada* characteristics					
	Water required (ml)	Weight (g)	Weight (g/*vada*)	Oil absorption (ml/*vada*)	Diameter of *vada*		Expansion (mm)	Yield (No./100g)
					Before frying (cm)	After frying (cm)		
0 (Control)	68	168	15.0	2.90	6.3	6.5	02	11
10	71	171	15.0	2.90	6.3	6.6	03	11
20	71	171	15.0	2.90	6.3	6.6	03	11
30	75	175	16.0	2.90	6.3	6.7	04	11
40	75	175	16.0	2.90	6.3	6.7	04	11
50	75	175	16.0	2.90	6.3	6.4	01	11
60	77	177	16.5	2.90	6.3	6.4	01	11
70	77	177	16.5	3.09	6.3	6.5	02	11
80	77	177	16.5	3.09	6.3	6.5	02	11
90	77	177	17.0	3.09	6.3	6.6	03	11
100	79	179	17.0	3.09	6.3	6.6	03	11

Note: PM: Proso Millet

dough was puffed, easy to break with three fingers, easy to chew, had soft texture, was pleasant with most appealing appearance and had light brown color which was accepted more.

Dough prepared with 80 and 90 per cent incorporation of proso millet was rollable, non-sticky to handle, had soft texture on surface and was stretchable. *Vada* prepared with 80 per cent incorporation of proso millet did not puff, had crispy texture and floury taste and hard to break and chew with brown color. Whereas, *vada* prepared with 90 per cent incorporation of proso millet puffed fully, had soft texture and brown color and little effort was needed to break and chew. Hence, 90 per cent incorporation of proso millet *vada* was the most accepted with acceptability index of 95.55. The formulation with 100 per cent replacement of sorghum resulted in sticky dough with higher water absorption and was not easily stretchable. The *vada* prepared with this formulation did not puff and were hard in texture, hence were slightly acceptable. However, it was accepted on par with control. This shows that small amount of sorghum is essential to obtain well acceptable *vada*. This probably may be reasoned to the variations in the overall composition of two grains and thus the functionality. Sarojani *et al.* (2021) developed *chakli* with 70 to 90 per cent incorporation of proso millet and Farheentaj *et al.* (2017) also developed *idli* mix with 80 and 90 per cent proso millet grits. In both the studies 100 per cent incorporation of proso millet did not produce ideal characteristics, hence were not accepted.

Sensory scores of proso millet incorporated *vada*

The results of sensory scores of proso millet incorporated *vada* prepared with different formulations are shown in Table 4, which were assessed using nine-point hedonic scale. All the formulations showed significant difference ($p < 0.05$) among all the sensory parameters. Sensory parameters of 90 per cent proso millet incorporated *vada* received highest scores for appearance (8.50), color (8.60), flavor (8.70), taste (8.50), texture (8.70) and over all acceptability (8.60) with acceptability index of 95.55 per cent (Fig.1). Control formulation received significantly lower scores and acceptability index. *Vada* prepared with all the formulations were acceptable with acceptability index (Fig 1) of above 80.

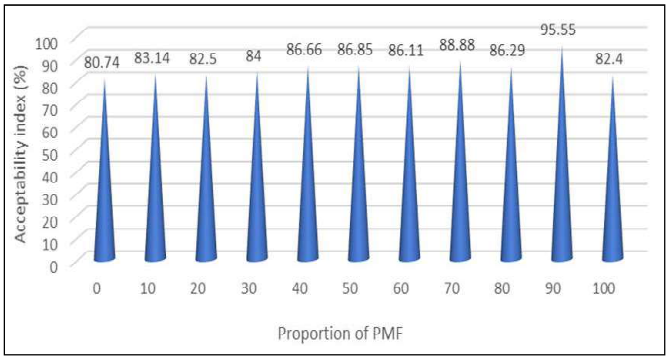

Fig1. Acceptability index of proso millet incorporated *vada*

Table 3. Descriptive characteristics of proso millet incorporated dough and *vada*

Proportion of PM(%)	Characteristics	
	Dough	*Vada*
0 (Control)	Easily rollable with soft texture. Stretchable and non-sticky to handle.	Puffed, easily breakable with soft texture. Light brown in color and easily chewable. Pleasant and most acceptable with more appealing appearance.
10	Easily rollable, elastic in nature with smooth texture. Stretchable with little efforts.	Puffed, easily breakable with soft texture. Brown in color and easily chewable. acceptable with appealing appearance.
20	Easily rollable, elastic in nature with smooth texture. Stretchable with little efforts and non-sticky to handle	Puffed, easily breakable with soft texture. Brown in color and easily chewable. Acceptable
30	Rollable but sticky to handle and soft in texture. Not stretchable.	Puffed, soft in nature, breakable and chewable with little effort and was brown in color. Acceptable
40	Difficult to roll, sticky to handle with smooth texture. Not stretchable.	Puffed, soft in nature, breakable and chewable with little effort and was brown in color. Acceptable
50	Rollable with soft texture, stretchable.	Partially puffed, thick and slightly hard in texture, breakable and chewable with little effort, brown in color. Slightly acceptable
60	Rollable with little effort, soft texture and stretchable.	Partially puffed, crisp in nature, breakable and chewable with little effort, brown in color. Acceptable
70	Easily rollable with soft texture and stretchable with little effort.	Puffed, soft in texture but hard to break and chew, dark brown in color. Acceptable and appealing appearance.
80	Rollable and non-sticky to handle with hard texture on surface. Stretchable, elastic rubbery feel.	Not puffed, crisp in nature, floury in taste, hard to break and chew, dark brown in color. Acceptable
90	Rollable, non-sticky to handle with hard texture on surface. Stretchable with little effort.	Puffed, soft in texture, breakable and chewable with little effort, brown in color. Most acceptable.
100	Difficult to roll, sticky to handle, with hard texture on surface. Stretchable with effort.	Not puffed, hard in texture, hard to break and chew, bitter and floury in taste, dark brown in color. Slightly acceptable.

Standardization of dough resting time during *vada* preparation

Vada mix with 90 per cent incorporation of proso millet was further assessed for the effect of dough resting time on the quality of *vada.* The results are exhibited in tables 5-7 and fig 2.

Physical characteristics of proso millet dough and *vada* with variation in dough resting time

Physical characteristics of dough and *vada* prepared with variation in dough resting time is given in Table 5. Water required for dough preparation (77ml), weight of dough (177g) and weight of each *vada* (16g) was same irrespective of dough resting time. The *vada* prepared with dough rested overnight, 1hr, 2hr and no resting absorbed 2.90ml of oil while, that prepared with dough which was rested for 3 and 4 hour had the oil absorption of 3.09ml. Higher oil absorption of *vada* prepared with longer resting time could be due to the longer fermentation time of dough which makes the moisture to evaporate out of products during frying, which in-turn leads to the penetration of oil inside the product and maximum uptake of oil due to large gas cells formed during long fermentation of dough which creates more pores (Ivorra *et al.,* 2014). Diameter of *vada* before frying was 6.3cm in all samples which increased to 6.5 cm (overnight and zero hour dough resting) and 6.6cm (1, 2, 3 and 4 hour dough resting) with 2 and 3mm expansion respectively.

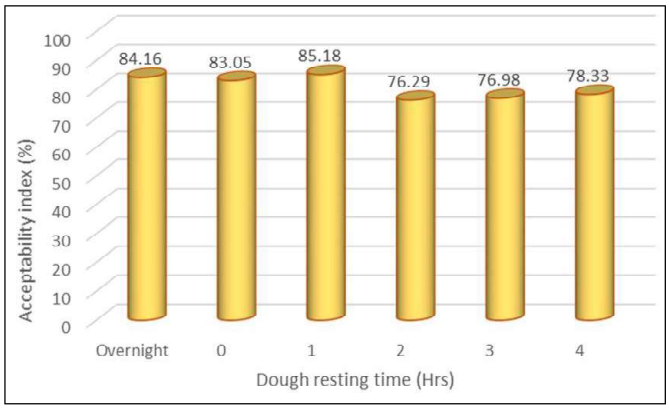

Fig 2. Acceptability index of proso millet *vada* with variation in dough resting time

Descriptive characteristics of proso millet dough and *vada* with variation in dough resting time

Descriptive characteristics of proso millet *vada* and dough with variation in dough resting time are given in Table 6. Dough was rollable, non-sticky to handle, easily stretchable and had very soft texture when rested overnight. *Vada* prepared with this dough were puffed, had soft texture and brown color, less effort was needed to break and chew, gave slightly sour taste. When dough was rested for 0, 1 and 2 hr, it was rollable, non-sticky to handle, had hard texture on surface and was stretchable with little effort. *Vada* prepared immediately after dough preparation did not puff, was thick, had hard texture and brown color and little effort was needed to break and chew whereas,

Table 4. Sensory scores of proso millet incorporated *vada*

Proportion of PM (%)	Appearance	Color	Flavor	Taste	Texture	Overall acceptability
0 (Control)	7.80±0.78^{c}	7.70±0.67^{b}	7.10±0.56^{cd}	6.80±0.91^{e}	7.10±0.56^{cd}	7.10±0.56^{d}
10	7.70±0.67^{c}	7.70±0.67^{b}	7.60±0.69^{bc}	7.20±1.03^{cde}	7.30±0.67^{bcd}	7.40±0.51^{bcd}
20	8.80±0.66^{a}	7.70±0.94^{b}	6.90±0.99^{d}	7.20±0.78^{cde}	7.40±0.84^{bcd}	7.35±0.78^{cd}
30	7.80±0.78^{b}	8.00±0.47^{b}	7.60±0.69^{bc}	7.35±0.47^{cde}	7.25±0.63^{bcd}	7.45±0.49^{bcd}
40	8.10±0.56^{bc}	8.10±0.56^{ab}	7.50±0.97^{bcd}	7.60±0.96^{bcd}	7.50±0.97^{bcd}	8.00±0.94^{ab}
50	8.00±0.47^{bc}	8.10±0.56^{ab}	7.75±1.13^{bc}	7.85±1.10^{abcd}	7.70±0.94^{bc}	7.85±1.16^{bc}
60	7.80±0.63^{c}	8.00±0.47^{b}	7.60±0.51^{bc}	8.00±0.47^{abc}	7.50±0.70^{bcd}	7.60±0.51^{bcd}
70	7.90±0.73^{c}	7.90±0.73^{b}	8.10±0.56^{ab}	8.20±0.42^{ab}	7.90±0.73^{b}	8.00±0.66^{ab}
80	8.00±0.81^{bc}	8.00±0.81^{b}	7.70±0.67^{bc}	7.80±0.78^{bcd}	7.50±0.84^{bc}	7.60±0.69^{bcd}
90	8.50±0.52^{ab}	8.60±0.51^{a}	8.70±0.48^{a}	8.50±0.52^{a}	8.70±0.48^{a}	8.60±0.51^{a}
100	7.60±0.81^{c}	7.70±0.48^{b}	7.40±0.69^{bcd}	7.60±0.69^{bcd}	7.00±0.81^{c}	7.20±0.78^{d}
S.Em±	0.209	0.204	0.239	0.249	0.241	0.226
CD	0.588*	0.574*	0.671**	0.693**	0.676**	0.636**
F value	1.321	1.735	3.971	3.990	3.696	3.678

Note: PM- Proso Millet; Values with the same superscripts (a, b, c, d) in the same column are not significantly different; S.Em- Standard error of mean; C.D.- Critical difference; NS- Non significant;* Significant @ 5%; ** Significant @ 1%

Table 5. Physical characteristics of proso millet dough and *vada* with variation in dough resting time

Dough resting time (Hrs)	Dough characteristics		*Vada* characteristics					
	Water required (ml)	Weight (g)	Weight (g/*vada*) (ml/*vada*)	Oil absorption	Diameter of *vada* Before frying (cm)	Diameter of *vada* After frying (cm)	Expansion (mm)	Yield (No./100g)
Overnight	77	177	16	2.90	6.3	6.5	02	11
0	77	177	16	2.90	6.3	6.5	02	11
1	77	177	16	2.90	6.3	6.6	03	11
2	77	177	16	2.90	6.3	6.6	03	11
3	77	177	16	3.09	6.3	6.6	03	11
4	77	177	16	3.09	6.3	6.6	03	11

Table 6. Descriptive characteristics of proso millet dough and *vada* with variation in dough resting time

Dough resting time (Hrs)	Characteristics	
	Dough	*Vada*
Overnight	Rollable, non-sticky to handle with very soft texture. Easily stretchable.	Puffed, soft in texture, breakable and chewable with little efforts, slightly sour. Appealing brown in color. Most acceptable and pleasing appearance.
0	Rollable, non-sticky to handle with hard texture on surface. Stretchable with little effort.	Not puffed, thick and hard in texture, breakable and chewable with little efforts, light brown in color. Acceptable
1	Rollable, non-sticky to handle with hard texture on surface. Stretchable with little effort.	Puffed, soft in texture, breakable and chewable with little efforts, brown in color. Most acceptable
2	Rollable with little effort, non-sticky to handle with hard texture on surface. Stretchable with little effort.	Puffed, crisp in texture, breakable and chewable with little efforts, light brown in color. Acceptable
3	Rollable, non-sticky to handle with hard texture on surface. Stretchable with little effort.	Puffed, soft in texture, breakable and chewable with little efforts, light brown in color.Acceptable
4	Rollable, non-sticky to handle with hard texture on surface. Easily stretchable	Puffed, soft in texture, breakable and chewable with little efforts, light brown in color. Acceptable and pleasing appearance.

that prepared with dough which was rested for one hour was puffed, had soft texture and brown color which was breakable and chewable with little effort. Dough was rollable, non-sticky to handle, had hard texture and stretchable with little effort when rested for three hours, but was easily stretchable when rested for 4 hours. *Vada* prepared with doughs rested for 3 and 4 hours were puffed, had soft texture, breakable and chewable with little efforts and had light brown color.

Sensory scores of proso millet *vada* with variation in dough resting time

Organoleptic evaluation of *vada* which were prepared with dough rested for different durations (overnight, 0, 1, 2, 3 and 4hours) are given in Table 7. Results showed that taste of the *vada* was not affected significantly by dough resting time, but significant ($p < 0.05$) differences were observed for appearance, color, flavor, texture and overall acceptability.

Vada prepared with dough rested for one hour (7.90, 7.70, 7.80, 7.50, 7.80, and 7.70 respectively), overnight (7.90, 7.60, 7.80, 7.50, 7.20 and 7.40 respectively) or prepared immediately (7.50, 7.65, 7.30, 7.50, 7.50 and 7.40, respectively) did not differ statistically in terms of appearance, color, flavor, taste, texture and overall acceptability. *Vada* prepared with dough rested for 2, 3 and 4 hours received significantly lower scores which were on par with each other. Higher amount of fermentation probably lead to increased oil absorption may be the reason for lower acceptance. *Vada* prepared with dough rested for one hour had highest acceptability index of 85.18 followed by dough rested for overnight (84.16), *Vada* prepared with dough rested for two hours received lowest acceptability index of 76.29 (Fig 2).

Consumer acceptability of the mix

Consumer acceptability of proso millet *vada* using FACT scale is given in Table 8. The acceptability by varied consumers indicated that about 20.8 per cent of staff, 23.58 per cent of students and 20.8 per cent of general public liked to consume *vada* every opportunity they had, while 8.30 per cent of staff, 28.30 per cent of students and 12.50 per cent of general public preferred to eat *vada* often. About 12.5 per cent of staff, 10.37 per cent of students and 10 per cent of general public liked to eat *vada* frequently, whereas 25 per cent of staff, 17.92 per cent of students and 35 per cent of general public liked to eat *vada* now and then. Totally 94 per cent of the consumers from different walks of life liked the proso millet *vada* with acceptability score of 7.46.

Conclusion

Vada is a crispy and fried snack liked by all the age groups and energy rich product. Millets can be replaced by cereals

Table 7. Sensory scores of proso millet *vada* with variation in dough resting time

Dough resting time (Hrs)	Appearance	Color	Flavor	Taste	Texture	Overall acceptability
Overnight	7.90 ± 0.87^{a}	7.60 ± 0.69^{a}	7.80 ± 0.91^{a}	7.50 ± 0.76	7.20 ± 1.03^{a}	7.40 ± 0.96^{a}
0	7.50 ± 0.70^{a}	7.65 ± 0.57^{a}	7.30 ± 0.48^{ab}	7.50 ± 0.52	7.50 ± 0.52^{a}	7.40 ± 0.51^{a}
1	7.90 ± 0.87^{a}	7.70 ± 0.48^{a}	7.80 ± 0.78^{a}	7.50 ± 0.52	7.80 ± 0.78^{a}	7.70 ± 0.48^{a}
2	6.90 ± 0.73^{b}	6.90 ± 0.56^{b}	6.85 ± 0.57^{b}	7.10 ± 0.73	6.80 ± 0.78^{b}	6.65 ± 0.57^{b}
3	7.00 ± 0.47^{b}	6.80 ± 0.63^{b}	6.80 ± 0.42^{b}	7.10 ± 0.73	6.95 ± 0.59^{b}	6.95 ± 0.36^{b}
4	7.00 ± 0.47^{b}	7.10 ± 0.56^{b}	7.00 ± 0.66^{b}	7.10 ± 0.56	7.10 ± 0.56^{b}	7.00 ± 0.47^{b}
S.Em±	0.224	0.187	0.210	0.206	0.233	0.188
C.D.	0.636**	0.530**	0.596**	NS	0.661*	0.534*
F value	4.262	4.691	4.659	1.235	2.491	2.557

Note: Values with the same superscripts (a, b and c) in the same column are not significantly different; S.Em± : Standard error of mean; C.D.- Critical difference; NS- Non significant; ** Significant @ 1%; * Significant @ 5%

Table 8. Consumer acceptability of proso millet *vada* N=150

Opinion	Score	Teaching Staff (24)		College Students (106)		General public (20)		Total (150)	
		n	%	N	%	n	%	n	%
I would eat this every opportunity that I had	9	5	20.80	25	23.58	5	20.80	35	23.33
I would eat this very often	8	2	8.30	30	28.30	3	12.50	35	23.33
I would frequently eat this	7	3	12.50	11	10.37	2	10.00	16	10.66
I like this and would eat it now and then	6	6	25.00	19	17.92	7	35.00	32	21.33
I would eat if available but would not go out of my way	5	8	33.30	12	11.30	3	15.00	23	15.33
I don't like this but would eat this on an occasion	4	-	-	9	8.40	-	-	9	6.00
I would hardly ever eat this	3	-	-	-	-	-	-	-	-
I would eat this if there were no other food choices	2	-	-	-	-	-	-	-	-
I would eat this only if forced	1	-	-	-	-	-	-	-	-
Acceptability Score	7.46								

C.D.- Critical difference; NS- Non significant; ** Significant @ 1%; * Significant @ 5%

for developing products which are easy to prepare and consume. *Vada* mix developed with proso millet provided promising results for nutritional quality, functionality and acceptability. *Vada* prepared with sorghum, proso millet, wheat and bengal gram dhal in the proportion of 5:45:35:15 is well accepted. The technology of preparation of *vada* mix by using millets provides many health benefits and can be used by people of all segments.

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