International Journal of Home Science 2021; 7(3): 177-181

International Journal of Home Science

ISSN: 2395-7476
IJHS 2021; 7(3): 177-181

www.homesciencejournal.com
Received: 11-05-2021
Accepted: 20-06-2021

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Gender preferences of fortified aloo tikki with soybean

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DOI: https://doi.org/10.22271/23957476.2021.v7.i3c.1203

Abstract
Soybean is the richest source of protein in plant kingdom, contain all essential amino acids. It holds 12 times extra protein equaled to milk, 6 times more than rice grain, 4 times added than wheat and 2 times more compared to pulses. Provide several nutrients in good amount like fat and water soluble vitamins (A, D, B, C), minerals (calcium, iron, phosphorus) and isoflavones which have phytoestrogen property prevents osteoporosis and also decrease the possibilities of cardiovascular disease and different cancers. Incorporation of nutrients or non-nutritive bioactive compounds into food products for prevention of micro and macro nutrients deficiencies and maintenance of health of population with cost-effective technique is known as food fortification. The present study is planned to estimate sensory quality and overall consumer acceptability of different blends of fortified aloo tikki with soybean by hedonic rating test. For the preparation of different blends boiled grated aloo was blended with boiled grinded soybean at 4:0, 3:1, 2:2 and 1:3 ratio (Control group-Aloo tikki made by 100% potato, Sample A-75% Potato + 25% Soybean, Sample B-50% Potato + 50% Soybean and Sample C-25% Potato + 75% Soybean). The sensory characteristics of soy-fortify aloo tikki like appearance, texture, mouth feel and overall acceptability were evaluated by 50 panelists (Male 23 and female 27) by using 9-Point hedonic rating test. The results elaborated that majority of acceptability was seen for sample B (56%-Like extremely), followed by sample A (48%-Like very much) than sample C having (32%-Like extremely). Sample C have lower consumer acceptability compared to other samples but in comparative analysis between sensory characteristics of different blends sample A contain maximum acceptability regarding appearance (64%), Sample C contain higher percentage for texture (62%) and highest mouth feel acceptability was seen for sample B (52%). On the other hand overall acceptability of samples on gender basis, variations were seen among both male and female Conclusion drawn from this study unveiled that sample B which contain equal ratio of aloo and soybean was more preferred among both sexes and preference for sensory acceptability was also similar among both sexes. But variations were seen regarding overall acceptability among male and female.

Keywords: Fortification, soybean, aloo, sensory evaluation

Introduction
Soybean is upcoming hope for protein as it provides all essential amino acids in good amount and holds 30-45% protein (Islam *et al*., 2007, Serrem *et al*., 2011) [5, 7]. The chief protein yield of world is soybean. It contains 12 times more protein compared to milk, 6 times more than rice grain, 4 times more than wheat and 2 times more compared to pulses and also contain lecithin which support brain development (Gharras, 2009) [3]. Soybean is a pulse which rich in several nutrients like fat and water soluble vitamin (A, D, B, C), minerals (calcium, iron, phosphorus) and isoflavones (decrease the possibilities of cardiovascular disease and different cancers) (Ndife and Abbo, 2009, Gharras, 2009) [6, 3]. Soy-isoflavones have phytoestrogen property which prevents osteoporosis. This pulse enriches with non-nutritive compound also known as functional food like antioxidant and phytochemical those play an important role to maintain biological functions in the body prevent countless disease and also have fiber which helps in bowel movement to make gut healthier. High protein soybean also used for supplementation and fortification for weak clusters like PEM, children, pregnant and nursing mothers to improve health status (Islam *et al*., 2007) [5]. Soy protein is future hope especially for developing countries, where several peoples could not buy protein rich food due to poverty. The use of locally available protein rich low coast food for fortification, supplement and formulation of nutritious healthy foods is very important for developing countries (Gomez *et al*., 2003) [4]. With this richness, fortification is a method which improves the food product and addressed to all age groups.

It is a method of incorporating nutrients or non-nutritive bioactive components into food products (Dwyer *et al*., 2015) [2]. It is an impressive public health strategy with interesting cost-effectiveness ratios and has the advantage of being installed in the usual dietary patterns, without a major change in eating or health practices and is generally well accepted by the populations (Berner, Keast, Bailey & Dwyer, 2014; WHO & FAO, 2006) [1]. Considering all these literature in mind, the present study is planned to evaluate sensory quality and overall consumer acceptability of different blends of fortified aloo tikki with soybean by hedonic rating test.

1. Methodology

- **Raw material:** For preparation of aloo tikki, following
  - Material has been purchased from Jhansi market of U.P. state of India.
  - Potato
  - Soybean
  - Salt
  - Oil

Treatment

Table 1: Formulation of different level for fortification of aloo tikki

Treatments	Ratio (Aloo: Soybean)	Aloo (%)	Soybean (%)	Aloo Weight	Soybean Weight
Aloo tikki (Control)	4:0	100%	0%	150gm	0gm
Sample A	3:1	75%	25%	112.5gm	37.5gm
Sample B	2:2	50%	50%	75gm	75gm
Sample C	1:3	25%	75%	37.5gm	112.5gm

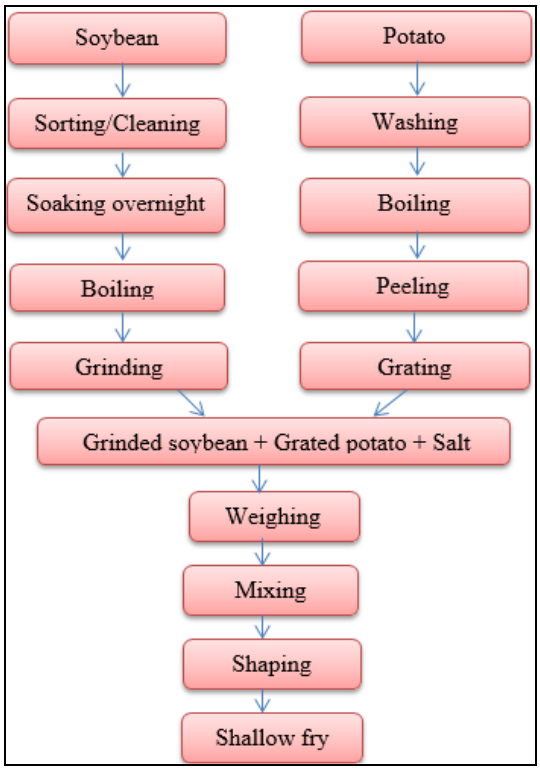

Fig 1: Procedure for preparation

Sensory evaluation

Aloo tikki prepared with different levels of soybean and evaluated by 50 panelists by using 9-Point hedonic rating test. The panelists were asked to assign a 9-point hedonic rating scale for appearance, texture, mouth feel and overall acceptability. Ranking of scores given as 9 (like extremely), 8 (like very much), 7 (like moderately), 6 (like slightly), 5 (Neither like or dislike), 4 (Dislike slightly), 3 (Dislike Moderately), 2 (Dislike very much) and 1 (dislike extremely) finding out the most suitable composition for aloo tikki.

2. Statistical Tool

The collection of data was done by 9-point hedonic rating scale and analyzed by using SPSS version 20 software.

3. Result & Discussion

Table 2: Percentage distribution of consumer acceptability for Sample A, B and C

Sr. No.	Range	Sample A		Sample B		Sample C	
		Frequency	%	Frequency	%	Frequency	%
1	Like Extremely	10	20	28	56	16	32
2	Like very much	24	48	14	28	9	18
3	Like moderately	6	12	6	12	10	20
4	Like slightly	8	16	1	2	5	10
5	Neither like or dislike	1	2	1	2	8	16
6	Dislike slightly	1	2	0	0	1	2
7	Dislike moderately	0	0	0	0	1	2
8	Dislike very much	0	0	0	0	0	0
9	Dislike Extremely	0	0	0	0	0	0
	Total	50	100	50	100	50	100

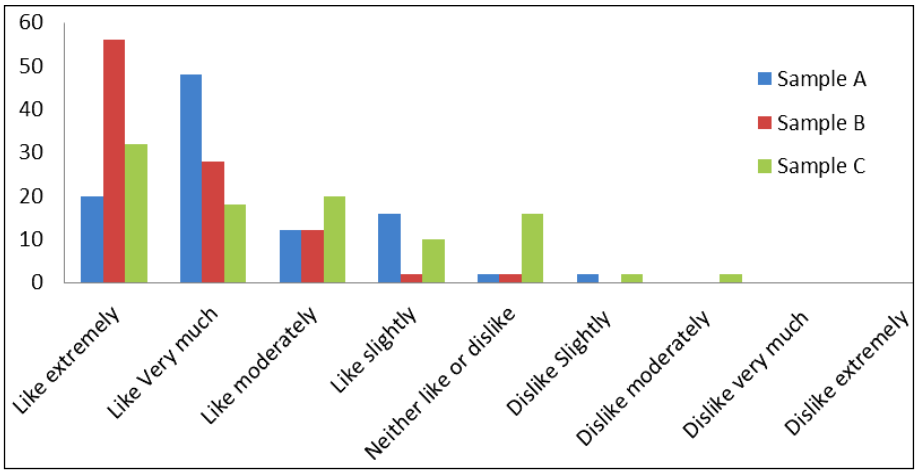

Fig 2: Percentage distribution of consumer acceptability for Sample A, B and C

Table 2 unveiled that majority of acceptability was seen for sample B (56%-Like extremely), followed by sample A (48%-Like very much) and sample C having (32%-Like extremely). Sample C have lower consumer acceptability compared to other samples. The reason behind this may be the higher ratio of soybean which gives it strong soy flavor that affect the sensory characteristics of sample C. Even the lowest score was seen for sample C (2%-Dislike moderately). Soy flour (15%) by adding to the Gluten Free bread, improves its quality, sensory characteristics, and nutritional properties (Taghdir *et al*., 2017) [9].

Table 3: Comparison of different aspects of sensory evaluation among samples A, B & C

Sensory evaluation	Sample A			Sample B			Sample C		
	Frequency	%	Mean	Frequency	%	Mean	Frequency	%	Mean
Appearance	32	64	9.6	11	22	3.3	7	14	2.1
Texture	9	18	2.7	10	20	3	31	62	9.3
Mouth feel	19	38	5.7	26	52	7.8	5	10	1.5

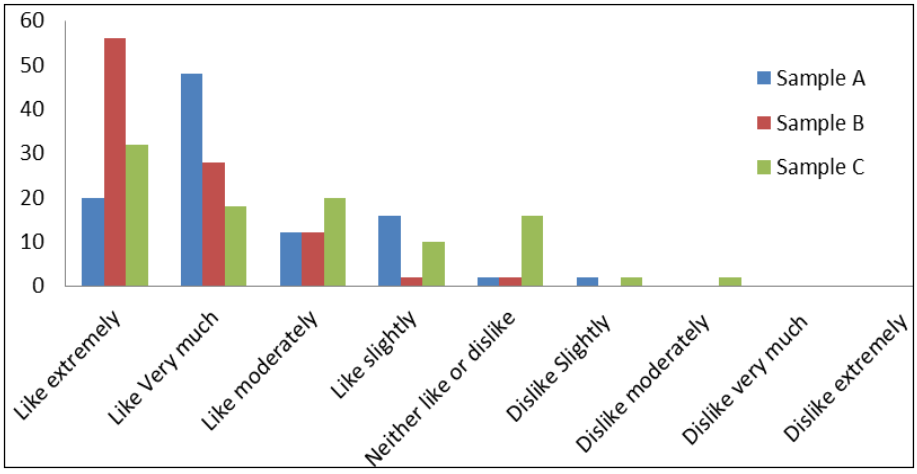

Fig 3: Comparison of different aspects of sensory evaluation among samples A, B & C

Table 3 elaborated a comparative analysis between sensory characteristics of different blends. Sample A contain maximum acceptability regarding appearance (64%) followed sample B (22%) and sample C was (14%). Concerning texture acceptability, the higher percentage (62%) was seen in Sample C as it contain higher proportion of soybean which gives it extra crispy texture while highest mouth feel acceptability was seen in sample B (52%). Similar results were seen in study done by Farzana *et al*., (2015) [8]. In their study, they demonstrated that whole wheat flour biscuits were nutritionally inferior in comparison to soy flour added with biscuits substitution up to 20%. Fifteen percent soy flour-supplemented biscuit is found to be the best in context to organoleptic evaluation. Adeniyi *et al*., (2017) [11] also examined that fortification of soybean flour with carbohydrate-rich foods such as Spaghetti and Tapioca pearls improves both the nutritional and sensory quality.

Table 4: Sensory acceptability of different blends among male and female

S. No.	Sensory quality	Male (n=23)	Female (n=27)
1.	**Appearance**		
	Sample A	17 (73.91)	15 (55.55)
	Sample B	4 (17.39)	7 (25.92)
	Sample C	2 (8.69)	5 (18.52)
2.	**Texture**		
	Sample A	4 (17.39)	5 (18.51)
	Sample B	4 (17.39)	6 (22.22)
	Sample C	15 (65.21)	16 (59.25)
3.	**Mouth feel**		
	Sample A	8 (34.78)	11 (40.74)
	Sample B	11 (47.82)	15 (55.55)
	Sample C	4 (17.39)	1 (3.70)

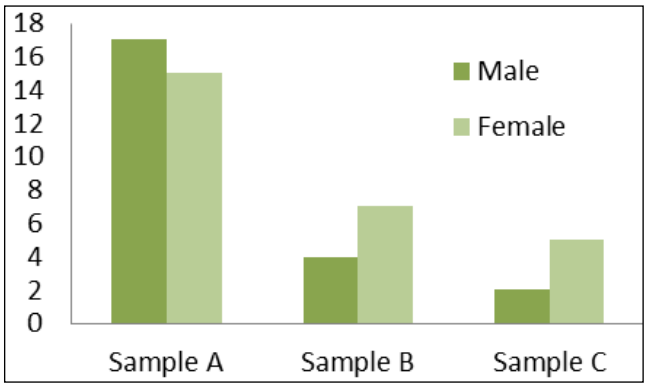

Fig 4a: Sensory acceptability of different blends among male and female (Appearance)

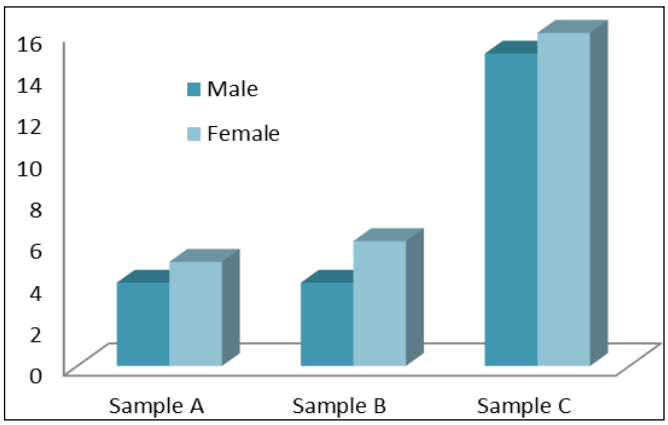

Fig 4b: Sensory acceptability of different blends among male and female (Texture)

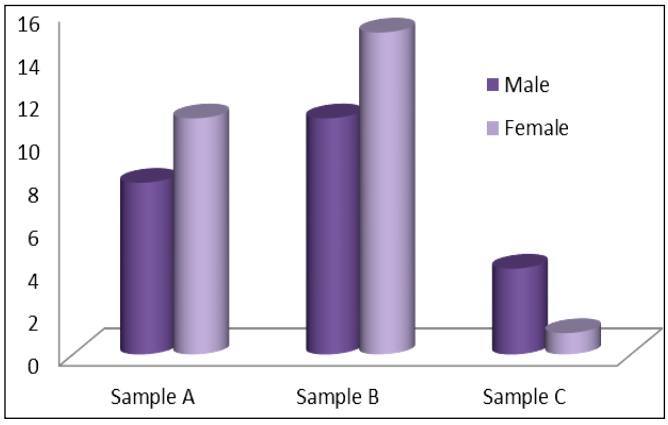

Fig 4c: Sensory acceptability of different blends among male and female (Mouth feel)

Table 4 represented that appearance of sample A was preferred by both sex male and female male (73.9%) and female (55.5%). But texture quality of sample C scored more by males (65%) and females (59.2%). Acceptability for mouth feel for sample B preferred more in females (55.5%). Mohajan *et al.*, (2018) [10] reported that soy flour addition to soup formulation had considerable effects on functional, nutritional, and sensory properties of mushroom-moringa soup. Conclusion drawn that adding of 10% soy flour is suitable for developing ready-to-eat soup powder.

Table 5: Overall acceptability of fortified aloo tikki among male and female

Sample	Female (27)		Male (23)	
	Frequency	%	Frequency	%
Sample A	9	33.33	1	4.34
Sample B	13	48.14	15	65.21
Sample C	5	18.51	7	30.43

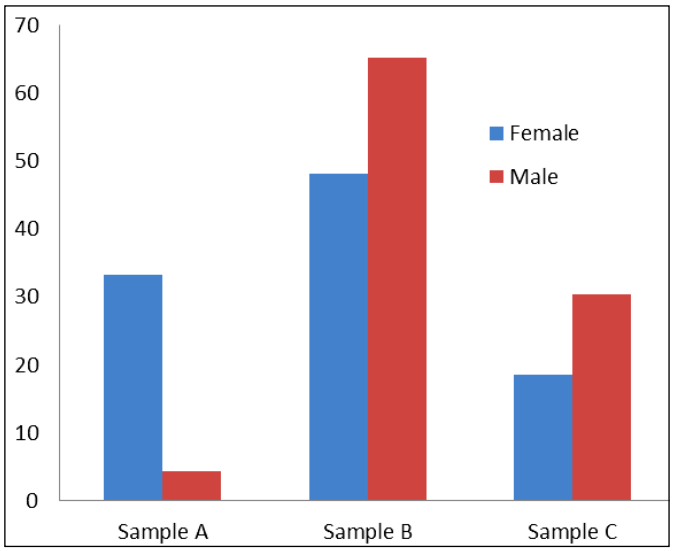

Fig 5: Overall acceptability of fortified aloo tikki among male and female

Table 5 illustrated the overall acceptability of samples on gender basis. Male accepted more sample B (65.2%) and sample C (30.4%) while female acceptance was seen with higher percentage sample B (48.1%) and sample A (33.3%). While similar results were visible in studies done by Singh A.K. *et al.*, (2009) [12] concluded that appearance, color, texture, flavor and overall acceptability of the Gulab Jamuns had improved with the addition of soy flour and Mishra N. *et al.*, (2012) [13] conduct a remarkable study that substitution of soy flour and rice bran up to 15% each without adversely affecting the sensory features of biscuit.

Conclusion

Conclusion drawn from the study unveiled that sample B which contain equal ratio of aloo and soybean was more preferred among both sexes. Preference for sensory acceptability was similar among both sexes. But variations regarding overall acceptability were seen among male and female.

References

1. Berner LA, Keast DR, Bailey RL, Dwyer JT. Fortified foods are major contributors to nutrient intakes in diets of US children and adolescents. Journal of the Academy of Nutrition and Dietetics 2014;114:1009-1022.
2. Dwyer JT, Wiemer KL, Dary O, Keen CL, King JC, Miller KB *et al*. Fortification and health: Challenges and opportunities, Advances in Nutrition 2015;6:124-131.
3. El Gharras H. Polyphenols: food sources, properties and applications-a review, International journal of Food Science and Technology 2009;44:2512-2518.
4. Gomez M, Ronda F, Blanco Caballero P, Apesteguía A. Effect of dietary fibre on dough rheology and bread quality, European Food Research and Technology 2003;216:51-56.
5. Islam T, Chowdhury A, Islam M, Islam S. Standardization of Bread Preparation from Soy Flour, International Journal of Sustainable crop production 2007;2(6):15-20.
6. Ndife J, Abbo E. Functional Foods: Prospects and Challenges in Nigeria, Journal of Science and Technology 2009;1(5):1-6.
7. Serrem C, Kock H, Taylor J. Nutritional quality, sensory quality and consumer acceptability of sorghum and bread wheat biscuits fortified with defatted soy flour, International journal of Food Science and Technology 2011;46:74-83.
8. Farzana T, Mohajan S. Effect of incorporation of soy flour to wheat flour on nutritional and sensory quality of biscuits fortified with mushroom, Food Science & Nutrition 2015;3(5):363-369.
9. Taghdir M, Mazloomi SM, Honar N, Sepandi M, Ashourpour M, Salehi M. Effect of soy flour on nutritional, physicochemical, and sensory characteristics of gluten-free bread, Food Science & Nutrition 2017;5:439-445.
10. Mohajan S, Orchy NT, Farzana T. Effect of incorporation of soy flour on functional, nutritional and sensory properties of mushroom-moringa-supplemented healthy soup, Food Science and Nutrition 2018, 1-8.
11. Adeniyi PO, Obatolu VA, Bakare AD, Lawal SB, Bolaji AT, Banjo OA. Fortification of Carbohydrate-rich Foods (Spaghetti and Tapioca Pearls) with Soybean Flour, a Timely and Evergreen Necessity, Journal of Food Security 2017;5(2):43-50.
12. Singh AK, Kadam DM, Saxena M, Singh RP. Efficacy of defatted soy flour supplement in gulabjamun, African journal of biochemistry research 2009;3(4):130-135.
13. Mishra N, Chandra R. Development of functional biscuit from soy flour and rice bran, International journal of agriculture and food science 2012;2(1):14-20.