RESEARCH ARTICLE Asian Journal of Dairy and Food Research, Volume 44 Issue 2: 251-253 (April 2025)

Preparation and Sensory Evaluation of Proso Millet Ready to Eat Khakhra

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10.18805/ajdfr.DR-1809

ABSTRACT

Background: Proso millet (*Panicum miliaceum* L.) is a hot weather grass with a growing season of 60-100 days. It is a highly nutritious millet grain used for human consumption and bird feed. The incorporated khakhra is highly nutritive product. The current study aimed to study preparation and sensory evaluation of proso millet RTE Khakhra.

Methods: For preparation process of proso millet khakhra, following mixture of the proso millet flour (20% 30% 40% 50%) and the wheat flour (20%) is considered as the major ingredient.

Result: Proso millet khakhra prepared from different mixtures of wheat flour and proso millet flour was subjected to sensory evaluation and scores are recorded for different parameters. The optimum amount of millet flour used within the method of preparation of khakhra was up to 30-40%.

Key words: Proso millet, Sensory evaluations, Value added product.

INTRODUCTION

Millet is a vital crop with following characteristics: Millet is understood to be a drought-resistant crop, resistance to pests and diseases, short season as compared to other major cereals. It is indigenous to several parts of the globe (Devi *et al*., 2011). The foremost widely grown millet is Pearl millet (*Pennisetum glaucum*) which is a very important crop in India and parts of Africa. Finger millet, proso millet and foxtail millet are important crop species (Annex II). Dietary fibre in the millets delays the gastric emptying and controls the rate of fat absorption (Gupta *et al*., 2012). Proso millet (*Panicum miliaceum* L.) is also known as common millet, hog millet, broom millet, yellow hog, black seed proso millet and white millet (Sheahan, 2014). Proso millet is the valued product for human kind. It contains (70%) carbohydrates, (12.5%) proteins, (1.2%) fat and (8%) crude fibre and is also rich in vitamins and minerals. They are excellent source of niacin, minerals and antioxidants. Proso Millet is also a good source of other dietary minerals like magnesium and phosphorus. Proso Millet has many nutraceutical properties that are helpful to forestall many health problems like hypotension, prevention of cancer and cardiovascular diseases, decreasing tumor cases *etc*. Other health benefits are increasing the time span of gastric emptying, provides roughage to gastro intestine. The inadequacy of essential nutrients may be improved through the fortifications and enrichment. It is well known that food processing generally improves the nutritional value of foods (Mbithi-Mwikya *et al*., 2000). The incorporated khakhra is highly nutritive product, sensory characteristics are studied further.

MATERIALS AND METHODS

The present study was conducted during 2019-20 in the Department of Food Science and Nutrition, College of Community and Applied Sciences, Maharana Pratap University of Agriculture and Technology Udaipur, Rajasthan. For preparation process of proso millet khakhra, following mixture of the proso millet flour and the wheat flour as the major ingredient was used.

T1 20% Proso millet flour+20% wheat flour by weight.
T2 30% Proso millet flour+20% wheat flour by weight.
T3 40% Proso millet flour+20% wheat flour by weight.
T4 50% Proso millet flour+20% wheat flour by weight.

Processing a proso millet flour

Proso millet
↓
Clean properly
↓
Overnight soak
↓
Drain excess water
↓
Dry in sunlight
↓
Weigh and grind
↓
Proso millet flour is obtained

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How to cite this article: Sandhvi, S. and Singh, V. (2025). Preparation and Sensory Evaluation of Proso Millet Ready to Eat Khakhra. Asian Journal of Dairy and Food Research. 44(2): 251-253. doi: 10.18805/ajdfr.DR-1809.

Submitted: 22-09-2021 **Accepted:** 19-03-2022 **Online:** 27-04-2022

Ingredients

Proso millet flour	30 g
Wheat flour	20g
Turmeric powder	2 g
Red chilli powder	2 g
Salt	As per taste
Ghee	2 g
Water	10 ml

Preparation of proso millet khakhra

Proso millet flour (20%, 30%,40%,50%)
↓
Mix Wheat flour (20%)
↓
Sieving
↓
Add of salt+speices
↓
Add hydrogenated Fat
↓
Addition of water
↓
Prepare it dough
↓
Make equal size of Balls
↓
Rolling in round shape chapat
↓
Chapati dry for 5 min
↓
Roasting on flat tawa
↓
Apply fat on both sides of khakra
↓
Ready to serve

Statistical analysis

Data presented represents means±standard deviation of triplicate measurements. The significant difference comparisons were done by one way analysis of variance (ANOVA), the statistical significance was defined as ($P<0.05$).

RESULTS AND DISCUSSION

Proso millet khakhra prepared from different mixtures of wheat flour and proso millet flour (PMF) was subjected to sensory evaluation and scores were recorded for different parameters were presented in Table 1.

Colour

The mean color score for different treatments of proso millet khakhra are ranged from 7.2 to 8.28. The treatment T2 (8.32) is found to be significantly superior over the rest of the treatments.

Taste

It is observed that the mean score for the taste of proso millet khakhra for treatments T1, T2, T3 and T4 are 7.35, 8.00, 8.01 and 7.01 respectively. The treatment T2 is superior over T1, T3 and T4 treatments.

Flavor

The mean score for the flavor of proso millet khakhra are ranged from 8.01 to 7.11. It is observed from above findings that 20% of wheat flour mixed with 30% of (PMF) will give rich flavor to khakhra.

Texture

The highest texture score is observed for treatment T2 (8.01) followed by T1 (7.10), T3 (7.24) and T4 (7.2). 30% of (PMF) mix most acceptable (T2).

Appearance

The mean score for the appearance of proso millet khakhra

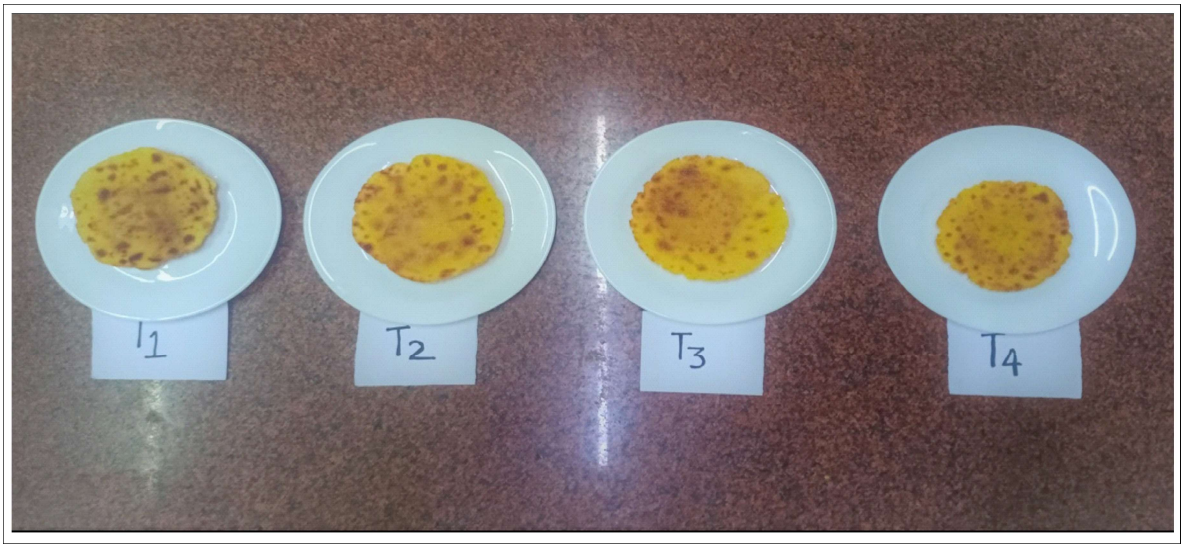


Table 1: Sensory evaluation of proso millet khakhra.

Treatments	Color	Taste	Flavour	Texture	Appearance	Overall acceptability
T1	7.2±0.21	7.35±0.12	8.01±0.26	7.10±0.53	7.01±0.42	7.12±0.04
T2	8.32±0.14	8.00±0.19	8.20±0.22	8.01±0.14	8.45±0.66	8.35±0.06
T3	8.10±0.21	8.01±0.18	8.14±0.13	7.24±0.23	8.11±0.94	8.16±0.09
T4	8.28±0.06	7.01±0.11	7.11±0.17	7.2±0.20	8.01±0.77	7.10±0.06
SEm±	0.09	0.05	0.19	0.17	0.05	0.05
CD (0.05%)	0.29**	0.16**	0.64**	0.55**	0.17**	0.16**

ranges from 7.01 to 8.01. The treatment T2 (8.45) is significantly superior over the rest of the treatments.

Overall acceptability

The mean score for treatment T1, T2, T3 and T4 are 7.12, 8.35, 8.16 and 7.10 respectively. The treatment T2 (8.35) and T3 (8.16) ranked like extremely. The mean values of sensory attributes reveal that khakhra containing 30 per cent PMF obtained highest score in the range of 8.32±0.14 to 8.35±0.06 and 'like very much' by panel members, further it was selected for analyzing the nutritional composition. Significant difference ($p \leq 0.05$) was found in all sensory attributes.

Surekha and Ravikumar (2014) found that the barnyard Khakhra incorporating wheat flour at 20, 30 and 40% level and observed that 40% level incorporation scored the best.

CONCLUSION

Thus, from the current research clear that proso millet may be successfully value added. Hence, it is concluded that the proso millet could be a potential grain among the other millets with superior nutrient content, may be a worthy addition to one's daily diet. Addition of proso millet flour into traditional khakhra more nutritious and also helps in improving the keeping quality of the product. The optimum amount of millet flour which up to 30-40%. Proso millet khakhra can be of good nutritive and commercial value.

Conflict of interest

All authors declare that they have no conflict of interest.

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