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Fermentation standardization for instant idli mix of foxtail millet with black gram formulation

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Abstract
Nutritional quality of food is the most important parameter for maintaining human health and complete physical well being. 'Idli' is a traditional steam cooked, popular fermented breakfast food, especially in Southern parts of India. The main purpose of preparing instant food mixes is to save time for the home maker. Foxtail millet & Black gram at appropriate levels. Foxtail millet millet based instant Idli mix at the ratio of 75: 15: 10 (Foxtail millet millet: Black gram) prepared from 48 hrs. Formulation was found best with excellent sensory qualities

Keywords: Fermentation standardization, instant idli mix, foxtail millet with black gram formulation

Introduction
Fermentation Process for Instant Idli Mix of Foxtail Millet with Black Gram Formulation is the most important parameter for prepration of 'Idli'. Traditionally method for idli prepration is steam cooked, fermented breakfast food, especially in India. Main ingredients were used to the desired formulation with optimum percentage as recommended by acceptability studies. Various acceptability parameters such as colour& appearance, texture, flavor, taste, mouth feel and overall acceptability. Millets are banifical for human health because they contains vitamins and minerals, sulphur containing amino acids and phytochemicals termed as 'nutri-cereals'. Foxtail millet higher in non-starchy polysaccharides and dietary fibre (Raj and Santhanam, 2015) [1]. Black gram is a important pulse contains about 26 per cent good protein. Black gram cures diabetes, control nervous, hair problems, digestive system disorders and rheumatic affliction. It is recognized as high-energy nutritious food to help in reducing malnutrition, nourishing the common population and to help in preventing and curing the diseases like obesity, diabetes, CVD, etc. Fermented idli has B-complex vitamins, compared to the raw unfermented ingredients (Reddy *et al.* 1982) [2]. Rapid industrialization and urbanization and changes in eating habits of people demand for ready-to-use snack products (Singh and Shurpalekar 1989) [5]. A common Indian traditional product Idli was prepared by supplementing foxtail millet and Black gram based instant idli mixes were nutritionally superior in terms of protein, fibre, carbohydrate, ash and minerals.

Material and methods
Foxtail millet was procured from JNKVV Zonal Agriculture Research Station, rewa (M.P.) and black gram were purchased from local market for study. Packing materials LDPE, PP & Aluminum foil bags were used. experiments were carried out in triplicate and mean values have been reported. Standardization of Instant Foxtail millet Idli Mix Optimization of procedure by method described by Amerine *et al.* (1965) [4].

Preparation of raw materials
Healthy grains of foxtail millet and black gram were dehulled in order to separate the husk using kunaita (traditional hand operated device). After cleaning, foxtail millet and urad bean were soaked in water separately at room temperature and fermented for 24, 48, &72 hrs. The fermented grains were dried in hot air oven at 55^0C, coarsely ground and stored in plastic containers for further use.

Preparation of instant foxtail millet idli mixes

present investigation instant foxtail millet idli mixes were made from foxtail millet in combination with black gram. These combinations were compared with control which was prepared rice in combination blalck gram.

Different blends of foxtail millet idli mix (100g)

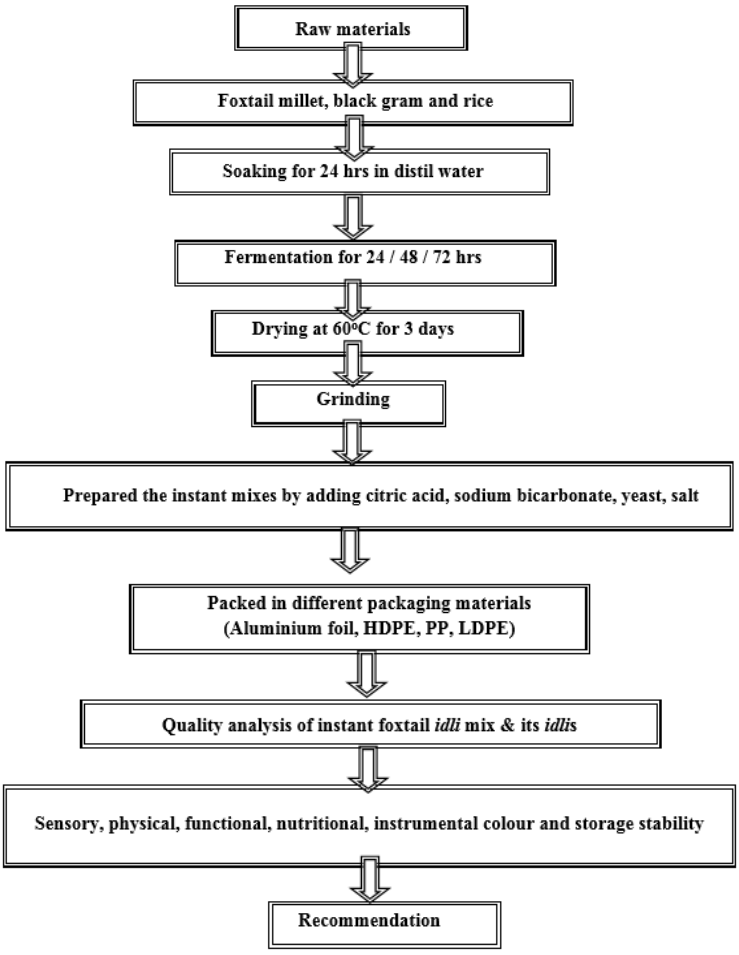
Treatments	Rice(g)	Foxtail(g)	Black gram(g)
Control	75	0	25
T1	0	90	10
T2	0	80	20
T3	0	70	30
T4	0	75	25
T5	0	70	30
T6	0	80	20

To standardize, ideal ratio mixes were prepared with different combination of fermented & dried foxtail millet, black gram along with 1g each of citric & sodium bicarbonate and 2g each of salt & dry yeast.

Preparation of Idli

Idli batter was prepared by mixing 100g instant idli mix with 120 ml distilled water and kept it for 10 min for rising. The batter was then poured in an oil smeared idli mould and steamed for 10 min.

Flow sheet for idli preparation



Recommendation

The following score card was used for judging the various sensory quality characteristics and overall acceptability of the Instant foxtail Idli products.

Like extremely - 9
Like very much - 8
Like moderately - 7
Like slightly - 6
Neither like nor dislike - 5
Dislike slightly - 4
Dislike moderately - 3
Dislike very much - 2
Dislike extremely - 1

Results

Accordingly idlis were made from various mixes containing 90% foxtail, 10% black gram, 80% foxtail, 20% black gram, 70% foxtail, 30% black gram, 0.5-1% citric acid, 0.5-1% sodium bicarbonate, 1-2% dry yeast, 0.8-3% salt and 80-120 ml water separately and cooked for 8-15 minutes. The raw materials foxtail millet and black gram were prefermented for 24, 48 and 72 hrs followed by drying before preparation of mix. Finally idli were prepared using the optimum level of ingredients arrived at desired formulation from the earlier results of acceptability studies of instant idli mixes.

Judges indicated that addition of salt at the rate 3gm/100 raw material imparted more saltiness to the idli. The raw materials must be pre fermented for 48 hrs for good quality idli with soft texture. Fermentation time of 72 hrs adversely affected the aroma of final product. The optimized recipe differed

from basic recipe in foxtail millet, black gram, citric acid, sodium bicarbonate dry acid, salt, water, cooking and fermentation time. On the basis of above findings, the level of different ingredient and method of preparation was finalized and presented in chapter –III.

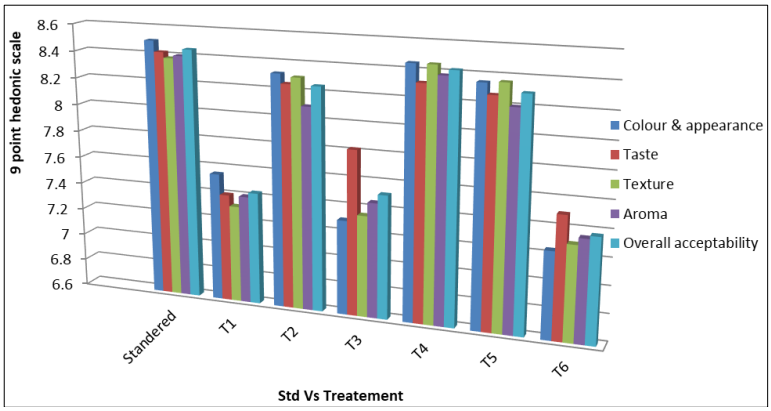


Fig 1: Sensory attributes of 24 hrs fermented Idli

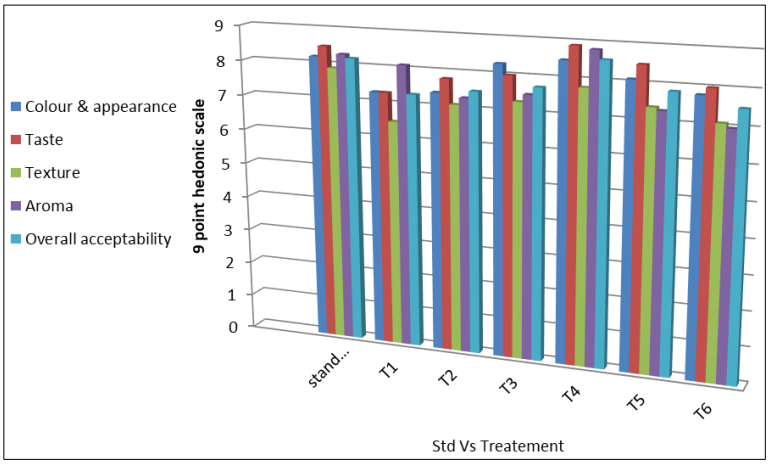


Fig 2: Sensory attributes of 48 hrs fermented Idli

Result and Discussion

Acceptability studies of instant foxtail millet idli

Sensory characteristics of foxtail millet idli prepared from different proportions of foxtail millet, black gram are shown in Fig. 1 to 3 The sensory score for texture, taste, aroma, mouth feel of foxtail millet idli decreased. The control samples had maximum overall acceptability whereas foxtail millet idli containing 75% of foxtail millet, 25% black gram were unacceptable to the panelists. Reduced acceptability of rice flour in foxtail millet idli may be attributed to the hardness and poor flavour contributed by rice flour at higher level. Idli is famous for its soft spongy texture, desirable sour taste and characteristics aroma. The results showed that the softness was higher in T_4 formulation and comparable to control.

In instant foxtail millet idli mix, better sensory attributes and maximum rise in batter volume was found in 48 hr. of fermentation irrespective of the blend. It was also seen that rise in batter volume me was relatively higher for blend incorporated with foxtail millet. The rise in batter volume was in the range 9 to 13.63 in 48 hr. fermentation period. Based on the above observation, it was concluded to allow the raw materials to ferment for an optimum period of 48 hr. at room temperature condition. Nisha *et al.* (2005) [3] suggested that during the preparation of idli, fermentation time is an important step which determines the sensory attributes and nutritional quality of idli in terms of flavor and texture.

References

1. Raj SJJ, Santhanam G. Evaluatin of sensory characteristics of foxtail millet based Ladoo. Global Journal for Research Analysis. 2015; 4(1):71-72.
2. Reddy NR, Saunke DK. Effect of fermentation on phyticphosphorus and mineral content in black gram, rice and black gram- rice blends. J fd Sci. 1982; 45:1708.
3. Nisha P, Laxmi A, Rekha S. Effect of stabilizers on stabilization of idli (traditional south Indian food) batter during storage food Hydrocoll. 2005; 19:179-186.
4. Amerine *et al.* Millets and Pulse Heritage Foods to improve Nutritional Level of Poor. ICFOST. CP-19, 1965, 12.
5. Singh, Shurpalekar. Development of Instant multigrain idli mix with minor millets. ICFST (Indian Convention of Food Science & Technology) CP-14, 1989, P-71.