ACCEPTABILITY AND KEEPING QUALITY OF BREADS OF SIX WHEAT VARIETIES

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Received: 08-07-2009 Accepted: 28-10-2010

ABSTRACT

The quality of six varieties of wheat namely Sonalika (National check), Khapli (Local variety), Ajantha, Kailash, HD-2189 and HD-4502 was evaluated with the following objectives. (1) To determine the physico-chemical characteristics of six varieties of wheat. (2) Organoleptic characteristics and keeping quality of bread of the selected varieties of wheat were evaluated. Wheat samples were conditioned to 15 per cent moisture and milled. The maida was stored in steel container for further use. One kg of wheat of each variety was ground into flour for various estimations. Physico-chemical characteristics such as of 1000 kernel weight (g), seed hardness (kg/grain), density and bulk density (g/ml) were determined. Moisture (%), ash (%) and gluten (%) content were estimated. The results indicated that the mean values of 1000 kernel weight was 34.3 - 44.8 g/grain and seed hardness (11.0 - 14.1 kg/grain). The moisture and ash contents ranged from 9.7 to 11.1 and from 0.9 to 1.6 per cent respectively. Wide varietal differences were noticed among the six varieties of wheat in dry and wet gluten contents (P < 0.5). The breads differed in organoleptic characteristics significantly from one another (P < 0.05). Interaction between varietal difference and storage time (0, 24 and 48 hours) on the acceptability of breads was found to be significant statistically (P < 0.05). Among the six varieties of wheat, the variety Ajantha one of the developed varieties of Marathwada Agricultural University, Parbhani was found to be superior and was equal to national check Sonalika in several attributes of quality evaluation.

Key word: Bread, Acceptability, Keeping quality.

INTRODUCTION

Bread is one of the important fermented processed product in developed and developing countries. Day to day consumption of processed food is increasing.

Bread is not exception for this. Being a cheaper processed food it will have good prospectus in developing countries like India. The consumption of bakery products is on the increase in India and the wheat flour requirement by the Baking Industry is also estimated to increase three folds by the end of this decade. The quality of flour, a prime requisite for making bread depends on mostly moisture content of flour, an optimum moisture content of 11 to 15 per cent. The new species of wheat have been released but the information regarding the baking quality has not been reported. Hence, six varieties of wheat namely Sonalika, Khapli, Ajantha, Kailash, HD-2189 and HD-4502 were selected for evaluating...
the quality of wheat with the following objectives.

1) To determine the physico-chemical characteristics of the selected variety of wheat.
2) To evaluate the organoleptic characteristics and keeping quality of bread prepared with selected varieties of wheat.

MATERIALS AND METHODS

The varieties of wheat namely *Triticum aestivum* (HD-2189, Kailash and Sonalika), *Triticum durum* (HD-4502), *Triticum dicoccum* khapli and an interspecific derivative between *Triticum aestivum* x *Triticum durum* designated as Ajantha formed the raw materials used for the study. Among these varieties, Sonalika served as national check, Ajantha and Kailash were the varieties developed at wheat research station MAU, Parbhani, HD-2189 and HD-4502 varieties developed in New Delhi and Khapli the local variety. All the six varieties of wheat were procured from wheat research station, Marathwada Agricultural University, Parbhani. The grains were cleaned and the samples were stored in airtight containers until the end of the experimental period. One kg wheat of each variety was ground into flour. The flour was further used for various estimations. Wheat samples were conditioned to 15 per cent moisture and milled in a laboratory mill. The maida was stored in airtight steel containers under refrigeration for further use. Physical parameters such as 1000 kernel weight (g), seed hardness (kg/grain) and density and bulk density were determined.

The parameter used for assessing the chemical parameters such as moisture, ash and gluten content were estimated by AOAC (1975) procedure. Estimation were carried out in triplicate. Bread was prepared by using straight dough method. Score card method by the selected panel members was used for organoleptic evaluation of bread (Fresh and Stored). Shelf life studies were carried out for 0, 24 and 48 hours at room temperature 22°C and 61 per cent relative humidity. Breads were stored in steel containers. The results were statistically analysed by one way analysis of variance technique, critical difference test and factorial analysis of one way variance as per Snedecor and Cochran (1956).

RESULTS AND DISCUSSION

The mean values for different physical and chemical characteristics of the six varieties of wheat are presented in Table 1.

The weight of 1000 kernel of the six varieties of wheat varied from 34.3 to 44.8 g. Significantly differences were noticed among the varieties. Kailash and HD-2189 had 1000 kernel weight significantly less (P < 0.05) than other four varieties of wheat. It was significantly more in Ajantha than that in the varieties Kailash, HD-2189 and HD-4502. Gulam Mueen-ud-Din *et al*. (2007) studied on quality of flat bread (Naan) from four different Pakistani wheat varieties. The results indicated that the 1000 kernel weight and test weight was significantly different in different wheat varieties as they ranged from 39.22 to 43.16 g and 71.28 to 79.43 kg/hL respectively.

The six varieties of wheat did not differ in density and bulk density. All the tested varieties of wheat had a value of 1.0 for density (g/ml) and a value of 1.3 for bulk density. The moisture content in wheat varieties ranged from 9.7 to 11.1 per cent. The highest value for moisture content (11.1 %) was observed for Sonalika next to Kailash (10.7 %). The variety Khapli had the lowest value of 9.7 per cent. The ash content varied from 0.9 to 1.6 per cent. Among the six tested varieties of wheat, Sonalika
Significantly varietal differences were noticed in wet and dry gluten content of the six selected varieties of wheat. The wet gluten content was the highest (44.3 %) in HD-2189. The variety HD-4502 had the lowest value of 25.3 per cent. The dry gluten content of Ajnatha was 11.6 which was significantly less than that in Sonalika (12.5).

**KEEPING QUALITY OF BREAD STORED AT ROOM TEMPERATURE**

Crust structure of bread from Sonalika obtained the maximum value of 3.74 and Khapli scored the minimum of 2.01. Taofik A. Shittu *et al.* (2009) studied on functional effects of xanthan gum on composite cassava-wheat dough and bread the results showed that bread sample containing xanthan gum had drier and coarser crust presented in Table 2: Effect of storage time on crust structure and crumb colour of bread.
compared to those without gum. The varieties Ajantha (3.80) and Sonalika (3.75) secured the highest mean score for crumb colour of bread. On the contrary, the local variety Khapli (1.66) had the lowest mean score. (Table 2).

By increasing the storage time of bread a gradual decreased in the mean scores for crumb colour of bread was noticed. The crumb colour of bread in fresh condition was superior to that of bread stored for 24 hours and the later in turn was superior to that stored for 48 hours. (P < 0.05).

The varietal mean score was maximum for the sponginess of bread of Ajantha (P < 0.05), closely followed by Sonalika. The variety HD-4502 had the minimum score of 1.79 for sponginess of bread (P < 0.05). Table 3 A gradual decline in the mean scores for sponginess of bread was noticed when the breads were stored for 24 and 48 hours. The breads of the varieties Ajantha and Sonalika in fresh state recorded the maximum scores 4.10 and 3.97 while the variety HD-4502 stored for 48 hours obtained minimum score of 1.15 (P < 0.05). (Table 3) Fiszman et al. (2005) studied on methodological developments in bread staling assessment : application to enzyme supplemented brown pan. They pointed out that fungal enzyme preparations with high endoxylase B-oxidase and a-L arabinosidase activities have delayed bread staling considerably without affecting porosity. For the taste of breads, the varieties Sonalika and Ajantha secured the highest mean scores of 3.7 and 3.67 respectively. On the other hand, the variety HD-4502 obtained the least mean score of 1.35 for the taste of bread (P < 0.05). The mean scores for the taste of bread reduced significantly and gradually with increasing of storage time. All the varieties had maximum scores for taste of bread at zero hour and minimum scores for 48 hours of storage time. The magnitude of reduction in the scores for taste of breads of the varieties Sonalika and Khapli were more marked between 24 and 48 hours. It was vice-versa with the varieties Ajantha and HD-4502.

**CONCLUSION**

On the basis of physico-chemical sensory characteristics and keeping quality of bread of different varieties of wheat, the wheat variety Ajantha one of the developed varieties of Marathwada Agricultural University, Parbhani was found to be a superior variety and was equal to national check Sonalika in several attributes of quality evaluation.
REFERENCES
Washington D.C.
Ghulam Mueen-ud-Din, Salim-ur-Rehman, Faquir Muhammad Anjum and Haq Nawas (2007). Quality of flat bread
Sci.*, **4** : 256-258.