

Preparation of Burger Bun for Multichain Restaurants

M.S. BUTT, F.M. ANJUM, B.E. BAJWA, T. KAUSAR AND M. TAUSEEF MUKHTAR
Department of Food Technology, University of Agriculture, Faisalabad-38040, Pakistan

ABSTRACT

Three commercial wheat varieties i.e. Pb-96, MH-97 and Shahkar-95 were evaluated for making burger bun. Ascorbic acid @ 20, 30 and 50 ppm was used singly and in combination with malt flour @ 0.5% to improve the quality of burger bun. Proximate analysis revealed that Pb-96 was higher in moisture (12.04%) followed by MH-97 (11.65%) and Shahkar-95 (11.08%). The protein content varied from 12.76 and 12.93%. The ash content was highest in Pb-96 (0.48%) followed by MH-97 (0.40%) and least in Shahkar-95 (0.38%). Mixographic studies revealed that peak height was maximum in Pb-96 (75%) followed by MH-97 (64%) and Shahkar-95 (54%) and mixing time ranged from 3.6 (Shahkar-95) to five minutes (Pb-96). Sensory evaluation of different characteristics of the burger bun such as colour, volume, texture, grain and taste were evaluated that ranged from 6.53 to 7.66, 5.96 to 7.83, 6.20 to 7.86, 6.33-7.93 and 6.30 to 7.63, respectively. On the basis of different sensory parameters, the highest scores were obtained by treatment having 50 ppm ascorbic acid in combination with 0.5% malt flour. It is, therefore, recommended that optimum quality burger buns should be prepared using 50 ppm ascorbic acid in combination with 0.5% malt flour, preferably with Pb-96 wheat variety.

Key Words: Burger bun; Ascorbic acid; Malt; Mixograph; Sensory characteristics

INTRODUCTION

The quality of burger bun is of the prime importance in multi-chain restaurants, which is affected by many factors from the ingredients to optimum conditions. Main ingredient for buns is wheat flour. However, oxidizing agents also play vital role to make improvement in the quality attributes. Ascorbic acid reacts with sulphhydryl group in the gluten chains of protein to modify its three dimensional structure (Sullivan *et al.*, 1940; Shishkina, 1977; Anonymous, 1979). This study was carried out to delineate the supplementation of ascorbic acid in different doses singly as well as in combination with barley malt flour (0.5%) in order to assess its effects on the quality of burger bun and to find out i) the variation in physico-chemical characteristics of newly evolved wheat varieties and their mixographic behaviour, ii) the multifunctional properties of malt and ascorbic acid, and iv) the most suitable wheat variety and ascorbic acid dose for the preparation of burger buns.

MATERIALS AND METHODS

Preparation of flour. Three promising wheat varieties i.e. Shahkar-95, Punjab-96 and MH-97 were procured from wheat Research Institute, Faisalabad, during the crop year 1999-2000. Wheat grains of these varieties were cleaned, tempered to 15.5% moisture content and milled through Quardmate Senior Mill to get straight grade flour. Barley variety Haider-93 was used for the preparation of malt flour and was procured from Ayub Agriculture Research Institute, Faisalabad. Barley grains were steeped, germinated and then dried. The dried grains were ground through Udy-Cyclone Sample Mill to get malted barley flour.

Proximate analysis. Straight grade flour samples of each

wheat variety were analysed according to the methods described in AACC (1983) for moisture, crude protein and ash content.

Mixographic studies. Mixographic studies were carried out by running flour samples through mixograph (National Mfg. Co. Lincoln Nebraska) to study the dough behavior such as dough development time and peak height as described in AACC (1983) method no. 54-40 A.

Preparation of burger buns. The burger buns were prepared from the wheat flour containing different doses of ascorbic acid (20, 30 and 50 ppm) alone and also in combination with malt flour (0.5%) with some modification according to the recipe given by Pyle (1988).

Sensory evaluation. The burger buns were evaluated by a trained panel of judges for the internal and external sensory parameters as described by Matz (1972).

RESULTS AND DISCUSSION

The chemical composition of wheat varieties has been shown in Table I. The moisture content was found to be significantly the highest in wheat variety Pb-96 (12.04%). The significantly lowest moisture content was observed in wheat variety Shahkar-95 (11.08%). With respect to protein content, variation was found from 12.76 to 12.93% and all the tested wheat varieties contained statistically identical values for this trait. The variation in ash content was found from 0.38 to 0.48% in different wheat varieties. The significantly highest ash content was found in the wheat variety Pb-96, while the lowest in the wheat variety Shahkar-95. Maximum peak height and mixing time was observed in the flour of Punjab-96. The lowest mixing time and peak height (54%) was recorded for Shahkar-95 (Table II). Similar findings were reported by Anjum (1991), Laeeq (1996), Farooq (1996) and Butt (1997).

Different characteristics such as colour, volume, texture, grain and taste have been presented in Table III. The colour ranged from 6.53 to 7.66. T7 got the maximum score i.e. 7.66. Volume and texture having range from 5.96 to 7.83 and 6.20 to 7.86, respectively. In both cases, the burger bun prepared by the addition of ascorbic acid @ 50 ppm in combination with malt flour @ 0.5% got maximum scores. The scores for grain and taste fall between 6.33 to 7.93 and 6.30 to 7.63, respectively. Maximum scores for colour (7.66), volume (7.83), taste (7.63), texture (7.86) and grain (7.93) were obtained by the sample containing 0.5% malt flour and 50 ppm ascorbic acid by T7 and the lowest score was obtained by T1.

Table I. Moisture, protein and ash contents of wheat varieties

Variety	Moisture%	Ash%	Protein%
MH-97	11.65 b	0.40 b	12.83 a
Pb-96	12.04 a	0.48 a	12.76 a
Shahkar-95	11.08 c	0.38 c	12.93 a

Table II. Mixographic characteristics of wheat varieties

Variety	Mixing time (min)	Peak height %
MH-97	4.0	64
Pb-96	5.0	75
Shahkar-95	3.6	54

Table III. Means values for sensory characteristics of bread prepared with ascorbic acid and malt

Treat.	Ascorbic acid (ppm)	Malt (%)	Colour	Volume	Texture	Grain	Taste
T1	-	-	6.53 d	5.967 d	6.20 c	6.60 c	6.30 c
T2	20	-	6.76 cd	6.867 c	6.76 bc	6.56 c	6.70 c
T3	30	-	7.06 bc	6.90 c	6.90 b	6.56 c	6.66 c
T4	50	-	7.40 ab	7.10 b	6.90 b	6.33 bc	6.63 c
T5	20	0.5	7.53 a	7.13 bc	6.96 b	6.90 bc	7.06 b
T6	30	0.5	7.56 a	7.43 bc	7.06 b	7.13 b	7.13 b
T7	50	0.5	7.66 a	7.83 a	7.86 a	7.93 a	7.63 a

T1 act as control

Table IV. Total score for various sensory characteristics of burger buns

Treatments	MH-97	Pb-96	Shahkar-95
T1	28	21	31
T2	29	30	27
T3	30	29	29
T4	33	32	32
T5	35	32	35
T6	37	37	35
T7	40	44	41

Total score for various sensory characters of burger buns is given in Table IV. Among the wheat varieties Pb-96 scored maximum (44) followed by Shahkar-95 (41) and MH-97 (40). It is evident from the data that Pb-96 gave best results among other varieties.

For Pb-96, the overall score for all treatments ranged from 21 to 44 out of 45. T7 had highest value followed by T6. The lowest scores were recorded in T1. It is obvious from the results that by using a dose of 50 ppm ascorbic acid in combination with malt flour @ 0.5% showed better performance in all wheat variety flour especially in Pb-96.

CONCLUSION

Optimum quality burger buns should be prepared using 50 ppm ascorbic acid in combination with 0.5% malt flour, using Pb-96 wheat variety followed by Shankar-95.

REFERENCES

- AACC, 1983. Approved Methods of the American Association of Cereal Chemists. *Am. Assoc. Cereal Chem.*, Inc., St. Paul, Minnesota.
- Anjum, F.M., 1991. Electrophoretic identification and technological characterization of Pakistani Wheats. *Ph.D. Thesis*, Department of Grain Science and Industry, Kansas State University, Manhattan, U.S.A.
- Anonymous, 1979. *Bakers Hand Book of Practical Baking*. Compiled by Wheat Association, USA.
- Butt, M.S., 1997. Physico-chemical and protein composition of spring wheats in relation to end use quality. *Ph.D. Thesis*, Department of Food Technology, University of Agriculture, Faisalabad.
- Farooq, A., 1996. Effect of Polyols (glycerol and sorbitol) on the quality and shelf life of bread and chapatti prepared from local and imported wheat. *M.Sc. Thesis*, Department of Food Technology, University of Agriculture, Faisalabad.
- Laeq, A.G., 1996. Effect of blending of imported wheat on milling and baking quality of indigenous wheat. *M.Sc. Thesis*, Department of Food Technology, University of Agriculture, Faisalabad.
- Matz, S.A., 1972. *Bakery Technology and Engineering*, 2nd Ed. The AVI Publishing Co. Inc., Westport Connecticut.
- Pylar, E.J., 1988. *Baking Science and Technology*, Sosland Publishing Co. Merriam, Kansas.
- Shishkina, Z.A., 1977. The importance of oxidation in bread making. *Baker's Digest*, 15: 39-43.
- Sullivan, B., M. Howe, F.D. Schmalz and G.R. Astleford, 1940. The action of oxidizing agents in flour. *Cereal Chem.*, 17: 507-20.

(Received 18 August 2001; Accepted 06 September 2001)