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Storage studies of ber powder at room temperature

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ABSTRACT

The present studies were undertaken in the Department of Horticulture, Marathwada Agricultural University, Parbhani. The treated samples were dried by two methods *viz*., sundrying and cabinet drying. The completely dried fruit pieces were grinded to powder form and stored in 80 gauge and 400 gauge polythene bags at room temperature for two months. The freshly prepared *ber* powder was analyzed for moisture content, acidity, ascorbic acid, sugars and non-enzymatic browning. The analysis of *ber* powder was undertaken at monthly interval. From the present studies it can be concluded that there is suitability of *ber* powder dried by sun drying and cabinet drying and available for utilization during off-season.

Key words : Ber, Fruit power, Sundrying

INTRODUCTION

The *ber* belongs to genus Ziyphus of the family Rhammaceae which has about 50 genera and more than 600 species. The Arabic name of fruit is Zizyphus lotus (Bailey, 1947). *Ber* has great medicinal value. *Ber* fruits are beloved to purify blood and help digestion and laxative, invigoration removing burning sensation, thirst omitting and blood diseases. The astringent seed is a tonic for heart and brain and allarys thirst. *Ber* fruit crop occupy about 12,000 ha area in India. The present study is useful to available *ber* powder in off-season.

MATERIALS AND METHODS

The present studies were carried out during 2000-2001 at Department of Horticulture, Marathwada Agricultural University, Parbhani. The *ber* fruits of same maturity were collected from the Central farm, Marathwada Agricultural University, Parbhani. Before drying and dehydration the following pre-treatment were given.

Blanching :

Weighed quantity of *ber* fruits was taken in muslin cloth and was dipped in boiling water for 5 to 8 minutes (Kurdiya, 1980).

Sulphitation

Sulphitation was done by steeping pieces in 1 per cent solution of potassium metabisulphite (KMS), the weight of the water was twice the weight of the pieces. The pieces were kept in the solution for 30 minutes (Khedkar, 1977). The drying and dehydration was carried out by sun drying and cabinet drying.

The *ber* powder prepared from unblanched, blanched and sulphited samples, sundried and cabinet dried pieces were converted into powder form and then packed in different packaging materials.

- Packaging in polythene bags (80 gauge)
- Packaging in polythene bags (400 gauge)

The powder packed was stored at room temperature ($27+5^0$ C).

Preparation of sample of dried powder for chemical analysis :

Known weight of dried powder was blended with little distilled water in pestle and mortaur to homogeneous pulp and then was taken for estimation. Acid, sugars and ascorbic acid was estimated as stated earlier.

Non-enzymatic browsing :

Non-enzymatic browsing (NEB) was measured as alcohol extractable colour, by soaking the product in 50 per cent ethanol for 24 hours with occasional shaking, filtering and recording the optical density at 420 nm (Thorat *et al*., 1963).

RESULTS AND DISCUSSION

The results obtained from the present investigation are summarized below :

Changes in chemical constituents of ber powders prepared from Gola variety during storage :

The data regarding the changes in chemical constituents of the stored *ber* powder prepared from unblanched, blanched and sulphited powder packed in polythene bags of 80 and 400 gauge of Gola variety of *ber* are presented in Table 1 and 2. The data revealed that there was slight uptake of moisture after two months

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Table 1 : Changes in moisture, ascorbic acid and MEB, acidity and sugar in dehydration *ber* powder prepared from Gola variety of *ber* during storage at room temperature

Treatments	Storage period in months	Polythene bag (80 gauge)						Polythene bag (400 gauge)					
		Moisture (%)	Ascorbic acid (mg/100g)	NEBOD 420 nm	Acidity (%)	Reducing sugar (%)	Total sugar (%)	Moisture (%)	Ascorbic acid (mg/100g)	NEBOD 420 nm	Acidity (%)	Reducing sugar (%)	Total sugar (%)
Unblanched	0	5.75	74.50	0.420	4.38	21.90	24.12	5.75	74.50	0.420	4.38	21.90	24.12
	1	6.07	66.50	0.447	4.23	22.50	24.90	5.93	69.72	0.432	4.37	22.72	25.10
	2	6.13	64.82	0.452	4.18	22.80	25.40	6.02	67.79	0.438	4.36	22.98	25.63
Blanched	0	5.35	78.49	0.393	3.56	19.68	20.21	5.35	78.49	0.393	3.56	19.68	20.21
	1	5.69	66.72	0.408	3.42	20.18	20.72	5.47	69.50	0.407	3.52	20.46	20.93
	2	5.77	65.73	0.425	3.41	20.38	20.91	5.56	67.59	0.413	3.49	20.68	21.13
Blanched sulphitation	0	5.11	119.09	0.300	3.71	18.13	19.94	5.11	119.09	0.300	3.71	18.13	19.94
	1	5.39	107.08	0.338	3.52	18.43	20.24	5.23	108.23	0.312	3.63	18.77	20.51
	2	5.43	89.40	0.342	3.41	18.62	20.55	5.31	90.71	0.330	3.69	18.83	20.78

Table 2 : Changes in moisture, ascorbic acid and MEB, acidity and sugar in sundried *ber* powder prepared from Gola variety of *ber* during storage at room temperature

Treatments	Storage period in months	Polythene bag (80 gauge)						Polythene bag (400 gauge)					
		Moisture (%)	Ascorbic acid (mg/100g)	NEBOD 420 nm	Acidity (%)	Reducing sugar (%)	Total sugar (%)	Moisture (%)	Ascorbic acid (mg/100g)	NEBOD 420 nm	Acidity (%)	Reducing sugar (%)	Total sugar (%)
Unblanched	0	5.82	28.76	0.546	4.18	20.70	24.05	5.82	28.76	0.546	4.18	20.70	24.05
	1	6.09	23.74	0.556	4.03	21.30	24.95	5.83	23.86	0.556	4.16	21.58	25.13
	2	6.10	21.79	0.573	3.38	21.60	25.09	5.98	21.93	0.563	3.47	21.87	25.42
Blanched	0	5.42	33.66	0.536	3.36	18.78	19.06	5.42	33.66	0.536	3.36	18.78	19.06
	1	5.70	29.62	0.558	3.23	19.28	19.56	5.61	29.79	0.548	3.34	19.42	19.79
	2	5.79	27.65	0.574	3.21	19.43	19.72	5.64	27.78	0.562	3.33	19.66	19.87
Blanched sulphitation	0	5.47	56.64	0.311	3.11	18.03	18.84	5.47	56.64	0.311	3.11	18.03	18.84
	1	5.62	47.67	0.337	2.98	18.83	19.14	5.32	47.79	0.329	3.10	18.98	19.31
	2	5.69	44.64	0.341	2.81	18.57	19.46	5.58	44.74	0.332	2.98	19.76	19.69

storage in all the treatments and different packages in case of sundried as well as in cabinet dried products. The pickup in moisture was more in product packed in polythene bags of 80 gauge than in 400 gauge. The increasing moisture percentage after two months storage period was found to be more in sundried product than dehydrated ones in all the treatments. The powder was packed in different packages but a slight decreasing trend was observed in all the samples after two months storage periods (Table 1 and 2). However, per cent loss of acidity was found to be more in dried and 80 gauge polythene packed product as compared to cabinet dried and 400-gauge polythene packed samples. In general unblanched samples had more acidity than blanched and sulphited ones.

Slight increase in both reducing sugars and total sugars in case of unblanched as well as blanched and sulphited products was observed irrespective of packaging condition (Table 1 and 2). However, sugars were found to be more in unbalanched samples and powder packed in 80 gauge polythene bags than other two treatments and 400 gauge polythene bags.

A continuous increase in non-enzymatic browning was observed during storage for two months in all the cases (Table 1 and 2). In general, browing was comparatively more in unblanched and sundried product than other samples.

The loss of ascorbic acid was rather rapid in sundried 80 gauge polypack samples than powder prepared from cabinet dryer and packed in 400 gauge polythene (Table 1 and 2). Better retention of ascorbic acid was observed in the sample treated with potassium metabisulphite (KMS) during storage. The ascorbic acid was found to be more in powder prepared from Gola (119.09 mg/100 g) in cabinet dried and polythene packed sample after two months of storage periods. The present studies are

supported by the findings of Bhatia *et al*. (1962) and Dabhade and Khedkar (1980).

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