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Research Article

IMPACT OF CHEMICALS, BLANCHING AND STORAGE PERIOD ON REHYDRATION OF DEHYDRATED KAKROL

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ABSTRACT
The kakrol fruit pieces were dried by cabinet drying. Blanched treatments recorded the higher values than unblanched treatments. Between two blanching times, blanching for 30 seconds recorded the higher values than blanching for 60 seconds. In the present experiment after dehydration, rehydration ratio, moisture content, cooking quality and overall acceptability was analyzed to know the effect of blanching and chemicals on rehydration of dehydrated kakrol. The parameters rehydration ratio, cooking quality and over all acceptability were decreased with increase in storage period where as moisture content of dehydrated product increased with increase in storage period. T_5 treatment recorded higher value when compared to all other treatments

Keywords: *Dehydration, Moisture Percentage, Rehydration Ratio, Cooking Quality, Overall Acceptability, Kakrol*

INTRODUCTION
Kakrol is an important perennial and dioecious vegetable which is grown for its taste and nutritive value. Dehydration has long been used for processing of fruits and vegetables which involves reducing the moisture content to a point at which the concentration of dissolved solids in the produce is so high that they prevent the growth of microorganisms. Dried products are in more concentrated form, less expensive and require lesser space for storage and transportation. The pre treatments of prepared raw material prior to dehydration have an important bearing on the quality of finished product. Seow *et al.,* (1992) reported that blanching treatment given prior to dehydration process affects the texture of the rehydrated products.

MATERIALS AND METHODS
The present investigation was conducted at post harvest technology laboratory, ANGRAU, Hyderabad during 2007 with 12 treatments and 3 Replications following CRD**.** The Treatments are as follows i.e., T_1- Blanching for 30 seconds, T_2- Blanching for 60 seconds, T_3- Blanching for 30 seconds by dipping in 10 per cent brine solution.

T_4- Blanching for 60 seconds by dipping in 10 per cent brine solution, T_5- Blanching for 30 seconds by dipping in 2000 ppm potassium meta bisulphate, T_6- Blanching for 60 seconds by dipping in 2000 ppm potassium metabisulphite, T_7- Blanching for30 seconds by dipping in 1 per cent turmeric powder, T_8- Blanching for 60 seconds by dipping in 1 per cent turmeric powder.

T_9- No blanching and dipping in 10 per cent brine solution, T_{10}- No blanching and dipping in 2000 ppm potassium metabisulphite, T_{11}- No blanching and dipping in one per cent turmeric powder and T_{12}- No blanching and data recorded on rehydration ratio, moisture percentage, cooking quality and over all acceptability.

The overall acceptability of cooked material was judged by sensory evaluation using nine Point Hedonic scale (Amerine *et al.,* 1965). The samples which obtained a score of 5.5 and above were considered acceptable. Dry matter percentage is the difference between drained weight of dried sample and amount of moisture present in the dried sample taken for rehydration and expressed in percentage. The data were subjected to statistical analysis as per the procedure out lined by Panse and Sukhatme (1967).

RESULTS AND DISCUSSION

In the present study, the kakrol fruit pieces were dried by cabinet drying. Initially the drying was done at 80°C for one hour to evaporate the water present in the periphery of the fruits then the temperature was reduced to 60°C. Otherwise there would be more loss in quality parameters and the drying of fruit pieces was faster. The faster drying rate was due to intense heat and a limited air circulation inside the cabinet drier. During drying, it took longer time for the water present on the periphery to evaporate and hence the longer drying time.

Any dried food product has to be rehydrated / reconstituted before it's used in food preparation. In the present experiment rehydration in boiling water took 30 minutes which showed that the dried pieces are not highly porous and are not capable of absorbing the water very quickly. The rehydration ratio ranged from 6.20 with unblanched to 7.89 with blanching for 30 seconds + 2000 ppm KMS. The rehydration ratio was higher in blanched treatments than in unblanched treatments. Further the rehydration ratio was decreased with increase in storage period. Ejilearassane *et al.,* (2001) in mango reported decrease in rehydration ratio during storage (Table 1).

There was gradual significant increase in the final moisture content of dried pieces from the 0^{th} (5.45) to the 6^{th} month (5.59) of storage. Among the treatments, there was significant increase in moisture content of dried pieces with increase in blanching time. The highest moisture content was recorded with T_2 (5.99) (Table 2).

Table 1: Effect of dehydration and months of storage on rehydration ratio of kakrol fruit

	Months of storage			
Treatments	**0**	**3**	**6**	**Mean**
T_1-Blanching for 30 sec	7.62	7.35	7.13	7.36
T_2-Blanching for 60 sec	7.51	7.21	7.15	7.29
T_3-Blanching for 30 sec + 10% brine	7.73	7.64	7.50	7.62
T_4-Blanching for 60 sec + 10% brine	7.50	7.11	7.04	7.21
T_5-Blanching for 30 sec + 2000 ppm KMS	8.10	7.93	7.64	7.89
T_6-Blanching for 60 sec + 2000 ppm KMS	7.92	7.68	7.39	7.66
T_7-Blanching for 30 sec + 1% Turmeric powder	7.30	7.04	6.92	7.08
T_8-Blanching for 60 sec + 1% Turmeric powder	7.20	6.98	6.87	7.01
T_9-Unblanched + 10% brine	6.64	6.34	6.12	6.36
T_{10}-Unblanched + 2000 ppm KMS	6.94	6.78	6.18	6.63
T_{11}-Unblanched + 1% Turmeric powder	6.62	6.32	6.14	6.36
T_{12}-Unblanched	6.48	6.12	6.02	6.20
Mean	**7.29**	**7.04**	**6.84**	

	F-test	**S.Ed**	**CD (0.05)**
Treatments (T)	*	0.028	0.0395
Months (M)	*	0.014	0.0197
TXM	*	0.049	0.0684

** Significant at 5% level of significance*

Table 2: Effect of dehydration and months of storage on final moisture of dried pieces (%) of kakrol fruit

	Months of storage			
Treatments	**0**	**3**	**6**	**Mean**
T_1-Blanching for 30 sec	5.62	5.86	6.00	5.83
T_2-Blanching for 60 sec	5.84	5.96	6.19	5.99
T_3-Blanching for 30 sec + 10% brine	5.26	5.32	5.42	5.33
T_4-Blanching for 60 sec + 10% brine	5.54	5.49	5.39	5.47
T_5-Blanching for 30 sec + 2000 ppm KMS	5.26	5.28	5.32	5.28
T_6-Blanching for 60 sec + 2000 ppm KMS	5.65	5.68	5.74	5.69
T_7-Blanching for 30 sec + 1% Turmeric powder	5.32	5.37	5.43	5.37
T_8-Blanching for 60 sec + 1% Turmeric powder	5.48	5.56	5.62	5.55
T_9-Unblanched + 10% brine	5.48	5.54	5.62	5.54
T_{10}-Unblanched + 2000 ppm KMS	5.34	5.38	5.42	5.38
T_{11}-Unblanched + 1% Turmeric powder	5.36	5.42	5.59	5.45
T_{12}-Unblanched	5.20	5.29	5.40	5.29
Mean	**5.45**	**5.51**	**5.59**	

	F-test	**S.Ed**	**CD (0.05)**
Treatments (T)	*	0.024	0.033
Months (M)	*	0.012	0.017
TXM	*	0.041	0.057

** Significant at 5% level of significance*

With increase in storage period, the cooking quality decreased significantly with highest being recorded with the 0^{th} month (6.79) to the 6^{th} month (6.60) of storage. Among the treatments, the highest being recorded with T_5 (7.59) and the lowest score for cooking quality was recorded with T_{12} (5.47). For a given treatment, there was significant decline in cooking quality with increase in storage period. At all storage intervals, T_{12} treatment recorded the lowest value and the highest value was recorded with T_5 (7.68) (Table 3).

Table 3: Effect of dehydration and months of storage on cooking quality of kakrol fruit

Treatments	**Months of storage**			
	0	**3**	**6**	**Mean**
T_1-Blanching for 30 sec	7.31	7.22	7.18	7.23
T_2-Blanching for 60 sec	7.18	7.14	7.02	7.11
T_3-Blanching for 30 sec + 10% brine	7.42	7.34	7.21	7.32
T_4-Blanching for 60 sec + 10% brine	7.24	7.19	7.11	7.18
T_5-Blanching for 30 sec + 2000 ppm KMS	7.68	7.59	7.52	7.59
T_6-Blanching for 60 sec + 2000 ppm KMS	7.29	7.20	7.14	7.21
T_7-Blanching for 30 sec + 1% Turmeric powder	7.32	7.26	7.18	7.25
T_8-Blanching for 60 sec + 1% Turmeric powder	7.14	7.09	7.02	7.08
T_9-Unblanched + 10% brine	5.77	5.68	5.56	5.67
T_{10}-Unblanched + 2000 ppm KMS	5.76	5.61	5.56	5.64
T_{11}-Unblanched + 1% Turmeric powder	5.72	5.61	5.56	5.63
T_{12}-Unblanched	5.72	5.49	5.22	5.47
Mean	**6.79**	**6.70**	**6.60**	

	F-test	**S.Ed**	**CD (0.05)**
Treatments (T)	*	0.020	0.028
Months (M)	*	0.010	0.014
TXM	*	0.035	0.048

** Significant at 5% level of significance*

There was gradual significant decrease in over all acceptability from the 0^{th} (6.57) to the 6^{th} (6.16) month of storage. Among the treatments, significantly higher value was recorded with T_5 (7.52). At all intervals of storage, T_{12} treatment recorded the lowest score for overall acceptability and the higher score was recorded with T_5 (7.63).

The role of sensory evaluation studies to assess the acceptability of a food product is well known. In new product development sensory tests provide information and guidelines for product improvement and to achieve optimization of product quality. Sensory evaluation provides the first opportunity for feedback on a new product (Rao *et al.*, 1997). In the present study the rehydrated product was evaluated for cooking quality and overall acceptability upto six months stored in polybags at three months interval. All the products obtained by various chemical treatments after dehydration were found to be acceptable as the score was above 5.5. But as the storage period increased the score was reduced. Among various treatments T_5 (Blanching for 30 seconds and treating with 2000 ppm potassium Meta bisulphate) recorded maximum score. Ejilearassane *et al.*, (2001) in mango, Jadhav *et al.*, (2005) in cauliflower, Saurabh and Yadav (2005) in chillies also reported that KMS was the best chemical for improving the quality of

dehydrated product because sulfite solutions are preferred as the most practical method of controlling the absorption of sulphur.

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