The Asian Journal of Horticulture, (June to November, 2009) Vol. 4 No. 1 : 95-98

Quality of dehydrated plum slices as affected by pre treatments and drying temperature

D.B. SINGH, R.K. GOYAL AND A.R.P. KINGSLY

Accepted : *March, 2009*

See end of the article for authors' affiliations

Correspondence to :

D.B. SINGH
Central Institute for Post Harvest Engineering and Technology, ABOHAR (PUNJAB) INDIA

ABSTRACT

The present investigation was under taken to study effect of pretreatments and to optimize the thin layer drying of plum slices in the tunnel dryer. The pretreatments were control, blanching in hot water and blanching with 1% KMS and dried at 50, 60 and 65^0 C. Pretreatment and drying temperature significantly affected time taken for drying, color and quality of dried slices. Desirable color is retained in pretreated slices and drying at 60^0 C. Vitamin C was maximum in blanching + 1% KMS (11.7 and dried at 60^0 C (0.78 mg/100g). Drying at high temperature of above 60^0 C with blanching and1% KMS pretreatment reduced the level of non-enzymatic browning and retained the desirable colour.

Key words : Pre treatments, Plum slices, Drying, Quality, Colour.

Plum (*Prunus domestica*) is an important fruit crop of temperate zone fruit crops. Plums are rich in sugars and carotenes (Wills *et al*., 1991) and are generally consumed fresh, with exception of a small quantity used for canning and beverage preparations. Usually plums with high sugar content and firm flesh are dried without removal of stone and are called prunes. The dried plum is often added to cathartic decoctions to improve their flavour. Plums, which contain high moisture (86-90%) wet basis, are highly perishable and hence drying and storage are considered important.

Traditionally fruits and vegetables are dried in open sunlight, which is weather dependent and prone to microbial and other contaminations (Mathioulakis *et al*., 1998). To achieve consistent quality dried product, industrial dryer should be used. During drying, exposure to open atmosphere for a long time may cause contamination and spoilage of product (Vagenas and Morinos-Kouris, 1991). Industrial drying ensure uniform, hygienic and dried product to be produced within a shorter time scale (Doymaz and Pala, 2002). Pretreatments like blanching and sulphitation (Dabhade and Khedkar, 1980) enhances drying rates and prevents fruits from darkening. The drying system, drying modes and pretreatments decides the drying kinetics and enzymatic browning. Systematic dehydration ensures longer shelf life and can be used in off-season of the particular fruit crop. Therefore, in the present investigation dehydration of plum slices was done to study the effect of air temperature and pretreatments on drying behavior of plum slices and quality retention of product.

MATERIALS AND METHODS

The experiment was conducted during 2005-2006 at CIPHET, Ludhiana, Punjab. For experimentation, Plum fruits of variety Satluj Purple uniform in size, shape and maturity were collected locally. The plum fruits were sliced uniformly with average thickness of 2.8±0.3 mm. The initial moisture content of the plum was 80-90% (w.b.) and was estimated by AOAC method (2000).

The thin layer drying experiments were performed in pilot plant tunnel dryer (NSW-600, Narang Kinetic Works, New Delhi). The samples were dried in multiple passes in the dryer. It took 8 minutes for the trays to complete a simple passage in the tunnel. Before drying, plum samples were blanched in hot water for 2 minutes, blanched and treated with 1% KMS and untreated kept as control. The samples were dried at 55, 60 and 65 ^{0}C. After reaching the dryer to set condition, plum slices (150g) were uniformly set in tunnel for drying. Moisture loss was calculated in 30 minutes interval by a digital balance of 0.01 g accuracy. The drying was continued until there was no large variation in the moisture loss and constant weight was obtained. Dehydrated slices of plum were packed in 200 g polyethylene bags, sealed and stored in dry cool place. The product was analysed for colour characteristics ('L', and 'a' values) and quality like vitamin C (Ascorbic acid), acidity, β- carotene (vitamin A) and protein.

The colour of plum slices in terms of 'L', and 'a' values were determined using HunterLab miniScan XE plus colorimeter (HAL, USA, Model 45/0-L). 'L' value indicates the lightness or darkness and 'a', red or green.

Titrable acidity (%), b-carotene, ascorbic acid and Non enzymatic browning were determined as described by Ranganna (1986). pH was estimated by AOAC methods (2000) and proteins were measured as described