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Effect of pre-treatments on quality of dehydrated palak (*Beta vulgaris* cv. BENGALENSIS HORT.) leaves

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ABSTRACT

Dehydrated products from palak were prepared after pre-treatment with brine and steeping in solutions of potassium metabisulphite (KMS), $CaCl_2$ and $NaHCO_3$. The pre-treated samples were dried in both electric drier at 50±2^{0}C and under open sun. The effect of pre-treatments and drying methods on the quality of dehydrated palak leaves was studied. Results of the study indicated that, better quality dehydrated product could be prepared by using brining treatment. The samples treated with six per cent brine + 0.1 per cent KMS for one hour and dried in electric drier recorded maximum recovery of 11.226 per cent, with rehydration ratio of 6.650, reconstitutability ratio of 0.595 and required minimum time for dehydration (6.683 hours). This treatment also recorded higher retention of chlorophyll (543.89 mg/100 g) and scored higher scores for colour and appearance (4.250) and overall acceptability (4.416).

Key words : Palak, Sun drying, Electric drying, Brining, Dehydration, Rehydration

Palak (*Beta vulgaris* cv. BENGALENSIS HORT.) is one of the most common leafy vegetables of tropical and subtropical region and is grown widely in India. It is a rich source of vitamin A (9770 IU), protein (3.49), vitamin C (70 mg), and other minerals like phosphorus (30 mg), calcium (380 mg), iron (16.2 mg) for every 100 g of fresh leaves. Palak is mainly processed by dehydration and it is used in preparation of palak powder, which has further use in preparation of many instant dishes. Because of its perishable nature and availability only in cool season, a study was conducted to develop simple techniques for preparation of dehydrated product that can be adopted by farmers at their field level.

MATERIALS AND METHODS

Fully developed palak leaves were destalked and cut into pieces of three to four cm length. Cut pieces of palak leaves (500 g/treatment/ replication) were dipped in chemical solutions as given below.

T_1 - Dipping in 3% salt + 0.1% KMS for 1 hour
T_2 - Dipping in 6% salt + 0.1% KMS for 1 hour
T_3 - Dipping in 0.25% KMS for 1 hour
T_4 - Dipping in 0.5% KMS for 1 hour
T_5 - Dipping in 0.5% $CaCl_2$ for 1 hour
T_6 - Dipping in 1% $CaCl_2$ for 1 hour
T_7 - Dipping in 0.1% MgO for 1 hour
T_8 - Dipping in 0.05% MgO for 1 hour
T_9 - Dipping in 1% $NaHCO_3$ for 1 hour
T_{10} - Control (untreated)

All the treated and untreated leaves were spread on trays in a thin layer and dried in electric tray drier at 55±2^{0}C and the temperature was reduced to 50±2^{0}C at final hours of drying. Another set of samples were dried under the sun.

The observations on dehydration ratio, rehydration ratio, reconstitutability ratio and time taken for drying were determined as given below:

Dehydration ratio :

Dehydration ratio was determined by using the formula:

$$\text{Dehydration ratio} = \frac{\text{Weight of raw material}}{\text{Weight of dehydrated material}}$$

Rehydration ratio :

Rehydration ratio of dehydrated samples was calculated from following formula Ranganna (1986).

$$\text{Dehydration ratio} = \frac{\text{Weight of rehydrated sample}}{\text{Weight of dehydrated sample}}$$

Total chlorophyll content present in dehydrated palak leaves was calculated by using the procedure given by Sadashiv and Manickam (1991) and expressed in mg per 100 g.

Organoleptic evaluation was conducted by making fine powder from dehydrated palak.