Research Paper :

Evaluation of storage period and acceptability of dehydrated carrot in recipe form

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ABSTRACT

Carrot is the best source of carotene, which is the precursor of vit-A. Dehydration is one of the methods used for processing and making different products and to extend shelf-life. Dehydration of carrots was carried out in three conditions *i.e.* open sun drying and drying in solar cooker in covered and uncovered condition. The highest dehydration temperature was attained when carrots were dried in uncovered condition in solar cooker. On an average, 50.25^0C higher temperature was noted inside the solar cooker than that of atmospheric temperature. In respect to evaporation rate per unit area, solar cooker dehydration method was significantly efficient over the open sun drying. Organoleptic score for colour, aroma, taste and overall acceptability was significantly high till six months of storage period. It was reduced after 6 months onwards of storage period.

Key words : Dehydration, Carrot, Drying of vegetables

Carrot (*Daucus carota* L.) is one of the most important root vegetables used for making curries, salads, sauces, pickles, preserves, juice, powder, flakes, sweet meats and soups. It is the best source of carotene, which is the precursor of vit. A. (Sagar *et al.,* 2004). However, it is not available throughout the year because of the fact that it is seasonal crop of perishable nature (Singh, 2001). Various processing methods such as radiation, freezing, canning, pickling and dehydration are used for making different products and to extend the shelf-life. Among them dehydration is preferred to be better because it reduces the cost of packaging, storage and transportation by reducing both, weight and volume of the end product (Brackett, 1987).

METHODOLOGY

The study was undertaken to investigate the potential of preservation of carrots by means of sun drying and solar cooker drying, which can be useful for urban as well as rural areas to store carrots for more time. Dehydration of carrots was carried out in three conditions *i.e.* open sun drying and drying in solar cooker in covered and uncovered condition. For covered condition of dehydration in solar cooker, black coloured cotton cloth was used for the experiment.

Domestic type solar cooker recommended by MEDA (Maharastra Energy Development Association, Pune) was selected for the experiment. All the solar cookers were of similar size *i.e.* 49x 49x16.5 cm with one reflector consisted of rectangular enclosures insulated at the sides

and bottom and two glass covers on top. Solar radiation entered through top and heated up the enclosures in which carrots were placed for dehydration.

The carrot used in the study was procured from the local market of Parbhani city. They were washed with running tap water and kept for draining for 10 min., peeled with stainless steel knife and grated with the help of stainless steel grater. 300 g of grated carrots were evenly spread on stainless steel trays. Trays were kept for dehydration in three conditions *i.e.* open sun drying and in solar cooker covered and uncovered condition. The dehydration was done to reduce moisture content up to 8-10 per cent from initial moisture content. The dehydrated carrots were packaged in LDPE pouches (400 gauges) with the help of sealing machine and stored in stainless steel and plastic containers at ambient temperature. The moisture content of fresh carrots was determined by standard oven drying method (AOAC, 1985). Temperature of open drying was measured by laboratory thermometer and for solar cooker drying dialed thermometer was used. Weight of carrots was measured by digital top pan balance. Final moisture content was measured by using infrared moisture balance. Moisture evaporation content per cent was calculated by difference in initial and final moisture content. Evaporation rate, moisture removed per unit area and evaporation rate per unit area were calculated by following formula (Nawle 1992) :

$$\text{Evaporation rate} = \frac{TM_R \ x \ 1 \, hr}{D_t}$$