

Dehydration of math by different drying methods

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■ **ABSTRACT** : Vegetables are highly perishable commodities and, therefore, need to be preserve as long as possible in order to make the commodity available in off seasons. Dehydration is a value addition operation of a produce. The optimization of such an operation leads to an improvement in the quality of the output. Dehydrated vegetables are used basically as a raw material in food products. In the present investigation, dehydration of math (*Amaranthus cruentus*) was carried out by tray drying and microwave drying. Before going for dehydration test physical properties of math (*Amaranthus cruentus*) were determined. The temperatures selected for tray drying were 40°C, 50°C and 60°C. The math (*Amaranthus cruentus*) was also dried in microwave oven for three different durations i.e. 10 sec, 1 min and 2 min. The dehydrated math (*Amaranthus cruentus*) was tested for ascorbic acid content, α -carotene content, rehydration test and organoleptic evaluation.

■ **KEY WORDS** : Math, Dehydration, Rehydration, Tray drying, Microwave drying

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India is the largest producer of vegetable in the world next only to China with an annual production of 72.83 million tonnes from 5.63 million ha with an average productivity of 13t/ha (Lidhco, 2006). Though the vegetable requirement is 300g/day/person as recommended by dietician, we are able to meet about 1/9th of that requirement only (Anonymous, 2008). The green leafy vegetables are a group of edible leaves that are rich in nutrients such as vitamins and minerals. Some of the vegetables, which fall in this group, are spinach, amaranth, drumstick leaves, fenugreek leaves, mustard leaves, mint, and coriander. The green leafy vegetables are rich source of calcium, iron, beta-carotene, vitamin C, riboflavin, and folic acid. They contain all major nutrients required for growth and maintenance of health. The iron requirements of the body can be met to a considerable extent if green leafy vegetables are consumed daily in the diet. Vitamin C present in green leafy vegetable helps to absorb iron more efficiently. The dietary fibers supplied by leafy vegetables are useful for good bowel movement. At least 50 g of these inexpensive vegetables is recommended daily (Anonymous, 2008). The recommended dietary allowance of green leafy vegetables for an adult woman is 100g/day, adult man 40g/day, preschool children (4-6 yrs) 50g/day and for boys and girls beyond 10 yrs of age it is 50g/day (Anonymous, 2008).

Konkan region of Maharashtra is located in Western Ghats of the country and topography is such that supply of

vegetables to the region from other part is cumbersome and expensive. Region produces most of the vegetables to meet the demand. Math (*Amaranthus cruentus*) or Rajgira is very popular in the region and people of the region love to have it round the year. However, being perishable in nature and also seasonal cannot be made available throughout the year.

However, traditional market places with their long established methods of buying and selling vegetables are faced with new problems, which are likely to produce many changes in the general pattern of marketing. Vegetables are highly seasonal and are usually available in plenty at a particular part of the year. In the peak season; the selling price becomes too low leading to heavy losses to the grower. Also, due to the abundant supply during the season, there is a glut in the market resulting in the spoilage of large quantities. Preservation of these vegetables can prevent the huge wastage and make them available in the off-season at remunerative prices.

Dehydrated vegetables can be produced by a variety of processes. These processes differ primarily by the type of drying method used, which depend on the type of material to be dehydrated and the type of characteristics desired in the end product. In general, the process of dehydration of fruits and vegetables involves pre-drying treatments, such as size selection, peeling and colour preservation, drying or dehydration, using natural or artificial methods and post-