

## Changes in ascorbic acid content, colour (L-value) and water activity ( $a_w$ ) during air-drying of osmosed *Agaricus bisporus* slices

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■ **ABSTRACT** : The effect of different drying conditions on total drying time, ascorbic acid content, colour and water activity of osmo-dehydrated button mushroom slices were investigated at 45, 55, 65, 75 and 85°C drying temperature and 1.0, 1.5 and 2.0 m/s air velocities. The retention of ascorbic acid was found to be increased with decrease in drying temperature from 85 to 65°C and it decreased with further decrease in drying air temperature to 45°C. Similarly, with respect to individual effect of velocity, the sample dried with lower velocity (1.0 m/s) recorded highest ascorbic acid (27.24 mg/100 g dm). As the temperature increased, L-value of colour was increased from 45°C to 65°C, means sample became lighter in colour and thereafter decreased at 75°C. The sample dried with 2.0 m/s drying air velocity was found significantly superior with better colour (49.91). Sample with lowest water activity (0.228) was one dried at 85°C drying temperature and 2.0 m/s drying air velocity and was significantly superior over the sample dried by all other combinations of temperature and velocity.

■ **KEY WORDS** : Temperature, Air-velocity, Ascorbic acid, Colour (L-value), Water activity

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Mushrooms can be treated as a healthy and nutritive food, supplying good amount of protein, minerals and vitamins. Cultivation of mushroom has now become a household name in almost all regions in India. Button mushroom is grown in cool/hilly regions (17-18°C) of the country like Himachal Pradesh, Kashmir, Uttarakhand, Ooty hills, Dargiling hills and Gangtok (Sikkim) seasonally/all the year round. Mushrooms can be regarded as the vegetable of the future. A supplementary food, mushrooms are ideally suited for the Indian diet. Consumption of food is directly related to the quality. Quality commonly thought of as a degree of excellence, is one of the major positioning tool of the producer for marketability and for consumers satisfaction. Important attributes identified with food are nutritional value and colour. Nutritional value and colour are two major quality attributes of dehydrated products most important to consumers, and in general severe browning or discolouration and low nutrition levels reduce quality. Colour is one of the most important qualities of acceptance for products, reflects sensation to the human eye. Colour is important to consumer as a mean of identification, as a method of judging quality and for its basic esthetic value. Dried products are usually darker in colour, but darker colour does not mean better quality. The

aim of this study was to evaluate the effect of drying temperature and air-velocity on total drying time, vitamin C (ascorbic acid) retention and colour (L-value) content of osmosed button mushroom (*Agaricus bisporus*).

### ■ METHODOLOGY

The preliminary experiment for mass transport data of button mushroom (*Agaricus bisporus*) were performed for fixing the levels of input variables for further experimentation. Based on the results of preliminary investigations on water loss and salt gain, brine to sample ratio was taken as constant at 5:1 level, which was also suggested by various researchers for various fruits and vegetables (Kar and Gupta, 2001; Pokharkar and Prasad, 2002; Pisalkar *et al.*, 2011). The ranges of rest three input parameters such as solution temperature (35-55°C); brine concentration (10-20%) and duration of osmosis (30-60 min) were fixed and optimized on the basis of targeted salt gain.

The optimum salt gain was decided on the basis of consumer's taste panel. However, high solid gain affects the products quality and sensory characteristics. When high levels of solids are incorporated into the products (mushroom slices) during the osmotic dehydration significant sensory