

Research Paper :

# Tray drying of button mushroom (*Agricus bisporus*)

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### ABSTRACT

Dehydration of button mushrooms (*Agricus bisporus*) were carried out with various pretreatments like blanching, soaking in different combination of sodium metabisulphite, potassium metabisulphite, citric acid, sugar and sodium chloride in tray dryer. The dehydration experiments were carried out at different temperature of 40, 45, 50 and 55°C. The moisture loss data and drying characteristics such as drying rate, diffusivity, moisture ratio, during the drying process were determined. The qualities of dehydrated mushroom slices were evaluated on the basis of colour, appearance, rehydration ratio and veil opening by sensory evolution. The diffusion coefficient evaluated were  $1.01 \times 10^8 \text{ m}^2/\text{s}$  to  $9.82 \times 10^9 \text{ m}^2/\text{s}$  in tray dryer. The sample treated with combination of potassium metabisulphate, citric acid, sugar and NaCl at 55°C temperature were better accepted by consumer panel. The minimum and maximum rehydration ratio found 1.84 to 2.1, respectively.

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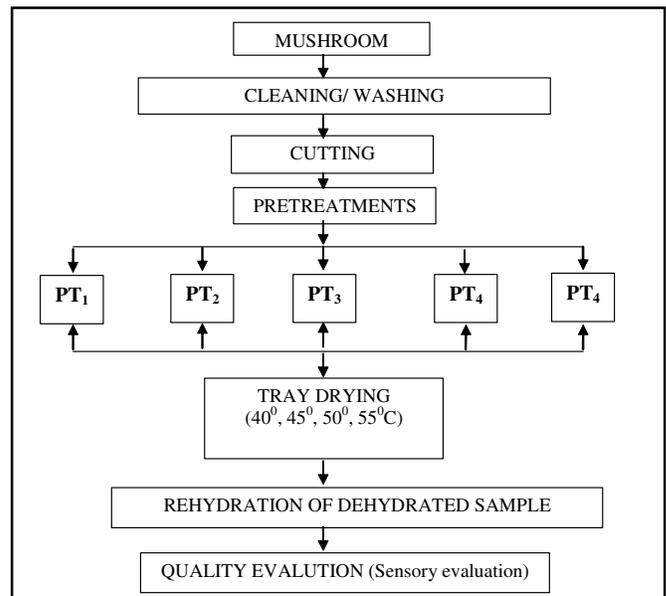
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**Key words :** Drying, Mushroom, Pretreatments, Tray dryer, Diffusivity

India is primarily an agriculture-based country. It offers vast potential for mushroom cultivation due to varied climate suited for the cultivation of different mushrooms. Mushrooms are appreciated for their characteristic flavour and texture. However, due to short shelf-life, the produce remains acceptable for few hours only. Like all fleshy fruits and vegetables, mushrooms are highly perishable because of their high moisture content, delicate texture and unique physiology. They cannot be stored for more than 24 hours at ambient temperature or for 1 to 2 weeks in refrigerated conditions. Once the fruiting body matures, degradation process starts and it becomes inconsumable after some time. Development of brown colour is the first sign of deterioration and is a major factor contributing to quality losses (Arumugathan *et al.*, 2003). The enzyme, polyphenol oxidize, in presence of oxygen ( $O_2$ ) combine with amino acid derivatives to form highly coloured complexes thus making them highly unacceptable. Further on storage, the fruiting bodies shrivel, lose weight with the opening of veil, the stalks grow longer and at last they open, exposing the gills. Toughening of texture and loss of whiteness are also observed during prolonged storage. Therefore, it becomes very important to evolve a better method of preservation for increasing the shelf life and maintaining the quality of mushroom and this can be achieved by dehydration. Dehydration is a major food processing operation in the food industry for the removal

of water (responsible for many deteriorative reactions) from a product (Madamba *et al.*, 1994).

### METHODOLOGY



### Procedure for the experiment:

Pretreatments:

The following pretreatments (PT) were applied to 0.5 cm mushroom slices.