

Study of drying characteristics of button mushroom (*Agaricus bisporus*)

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SUMMARY : Dehydration of button mushrooms (*Agaricus 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 fluidized bed 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 $1.03 \times 10^{-8} \text{ m}^2/\text{s}$ to $9.64 \times 10^{-9} \text{ m}^2/\text{s}$ in tray and fluidized bed dryer, respectively. 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 was found 1.90 to 2.61, respectively.

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Mushrooms are rich source of proteins, minerals and vitamins including riboflavin, niacin, folic acid, thiamine, pyridoxine and ascorbic acid. They have been recognised as the alternative source of good quality protein per unit area and time from the worthless agrowastes. Mushrooms have traditionally been used for the medicinal and tonic properties and cosmetic products. Antitumor effects have been reported by the extracts of various edible mushrooms. Compounds extracted from white button mushroom (*Agaricus bisporus*) have been reported to have antifungal and antibacterial properties (Busswell and Chang, 1993). The high proteins, sterols, micro-elements and low caloric contents make mushrooms ideal for prevention of cardiovascular diseases (Poongodi and Sakthisekaran, 1995). Today mushrooms are being cultivated in more than 100 countries with an estimated total production around 5 million tonnes. Out of 2000 varieties of prime edible mushrooms, about 80 have been grown experimentally and 4 to 5 species

produced on industrial scale throughout the world (Chang and Miles, 1991). There are about 20 varieties of mushrooms being cultivated throughout the world as food. The production of mushroom is increasing at a fast rate from 4000 tonnes in 1985-86 to 30,000 tonnes in 1996-97 (Rama and John, 2000). Present production of mushroom in India is about 50,000 tonnes (Suman and Sharma, 2005). Although many species of mushrooms are edible, most popular ones are white button mushroom (*Agaricus bisporus*), paddy straw mushroom (*Volvariella* spp.), oyster mushroom (*Pleurotus* spp.) and Shitake (*Lentinus edodes*). In India the first three mushrooms can be artificially cultivated in different parts, depending on the suitability of season (Khader and Pandye, 1981). Mushroom (edible fungi) is the most priced commodity among vegetables. The market for mushrooms continues to grow due to interest in their culinary, nutritional and health benefits. Mushrooms are highly perishable and start deteriorating immediately after harvest. They develop brown colour on the surface of the caps due to enzymatic action of phenol oxidase and they quickly become soft at a high temperature. The rate of respiration of the freshly harvested mushroom is high, in comparison to other horticultural crops and this result in shorter shelf life.

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EXPERIMENTAL METHODS

Procedure for the experiment:

– The procured mushrooms were washed and cleaned thoroughly