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Research Paper

Change in quality and chemical pararmeters of onion (*Allium cepa* L.) bulbs during storage period

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ABSTRACT

Onion bulbs were preserved with the use of different vinegar like White vinegar, Black vinegar, Cider vinegar of concentration 25 per cent, Brine 14 per cent and different vinegar with lactic acid bacterial culture, brine with lactic acid bacterial culture for a period of seven weeks. $CaCl_2$ 0.3 per cent was added to preserve solution to maintain the firmness of bulbs. Decreasing trend was observed in TSS and total sugar content of onion bulbs during the storage period. The variation in firmness was very less during storage period. The retention of firmness in fermented onion bulbs was due to the addition of 0.3 per cent $CaCl_2$.

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Onion (*Allium cepa* L.) is one of the major bulb crops of the world and is one of the most important commercial vis-à-vis spice crops grown in India. The genus *Allium* belongs to the family *Alliaceae*. Onion has a paramount effect in preventing heart diseases and other ailments (Saini, 1997). The export of preserved onions accounts for 4805.7 tonnes worth Rs. 28.6 crores from India (Anonymous, 2003). Since canned or frozen foods are too expensive, lactic acid fermentation combined with salting remains one of the most practical methods of preservation and often enhancing the organoleptic and nutritional quality of vegetables. Preservation of vegetables in vinegar is gaining importance instead of brine or salt as higher concentration of brine possess problems for people with hyper tension. Lactic acid bacteria (LAB) are among the extensively studied organisms for bio-preservation. They have natural association with different foods. Lactic acid bacteria grow as adventitious microflora on foods are added to food as cultures, they are generally considered to be harmless or known to improve human health (Stiles, 1996). Hence, preservation of onions by using different vinegars, brine, lactic acid bacterial cultures was conducted and changes in quality and chemical parameters of onion (*Allium cepa* L.) bulbs during storage period was studied.

MATERIALS AND METHODS

Mature and cured bulbs of onion varieties, namely Arka niketan, Arka bindu and White onion were collected from Indian Institute of Horticulture Research, Hesaraghatta, Bangalore during the month of January-February. Stainless steel knives were used for peeling and cutting of onion bulbs. Glass bottles of 700 ml capacity were used for preservation. The onion top and roots were removed with the help of sharp stainless steel knives, later onions were peeled for easy removal of outer loosened scales. Brine solution of 14 per cent was prepared by dissolving 14 g of crystallized iodide salt in 100 ml of clean water, 25 per cent vinegar was prepared by diluting 4 per cent commercially available acetic acid, 25 ml of vinegar was diluted in 100 ml of water to get 25 per cent. Lactic acid bacterial suspension was prepared by using Mann Rogosa and Sharpe (MRS) broth. The cultures were incubated at 37^0C for two days. The onion bulbs were put in to different vinegar, brine, vinegar with lactic acid bacterial culture, brine with lactic acid bacterial culture in glass bottles. To this $CaCl_2$ (0.3%) was added and kept in dark at room temperature for about seven weeks.

The samples were subjected to chemical analysis and sensory evaluation at weekly intervals. Total soluble solids (%) was determined by digital hand refractrometer,