EFFECT OF DIFFERENT PRESERVATIVES AND TEMPERATURES ON THE QUALITY AND SHELF LIFE OF CUT PINEAPPLE CUBES

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2006

ABSTRACT

A research was conducted at Eastern University, SriLanka during the period of May to August 2006 to evaluate the effect of different preservatives and temperatures on the nutritional, sensory and microbiological qualities and on the shelf life of cut-pineapple cubes.

The Pineapple was cleaned, cut into 1" × 1" cubes and added with three different preservatives such as sodium benzoate, ascorbic acid and sodium metabisulphite. All the four samples were provided with two different temperatures, 5°C± 0.5°C and 10°C± 0.5°C. Three replicates were tested for each experiment. The fruits under these treatments were assessed for nutritional quality, sensory characters, microbiological safety and shelf life.

Nutritional analysis was done for, titrable acidity, ascorbic acid content, total soluble solids, total sugars and crude fibre for two days interval throughout the experimental period. The declining trend with storage period was observed in ascorbic acid, total soluble solids, total sugars and crude fibre and an increasing trend was observed with storage period in titrable acidity for all the treatments. Compared to the samples stored at 10°C, the samples stored at 5°C showed the better performance. Among the samples stored at 5°C, the ascorbic acid treated sample has an initial increment of ascorbic acid and a slow rate of decline in ascorbic acid content than other treatments were observed. This was due to the supplement of ascorbic acid as a preservative. Also the results of chemical analysis revealed that there were significant differences ($p<0.05$) between the treatments and days of storage for acidity, ascorbic acid, total soluble solids, total sugars and crude fibre.

Organoleptic assessment was conducted for pineapple flavour, taste, colour, texture, absence of off-flavour, absence of browning and overall acceptance for eight treatments. Nine-point hedonic scale ranking method was used to evaluate the organoleptic properties. The results revealed that, there was significant difference ($p<0.05$) among the treatments for pineapple flavour, taste, colour, texture, absence of off-flavour, absence of browning and overall acceptability.

Microbiological safety of cut pineapple throughout the storage period also studied by inoculating the cut fruit at 1st, 3rd, 5th and 8th day of storage respectively in the potato dextrose agar medium and the nutrition agar medium for all treatments. No microbial growth was observed in freshly inoculated sample. Among the 8th day inoculated samples, fungal and bacterial growth observed in sodium benzoate treatment stored at 10°C including the control treatments stored at 5°C and 10°C.

The study was also focused on the suitability of treatments in terms of storage life at two different temperatures. Ascorbic acid treatment stored at 5°C have the maximum shelf life of 20 days followed by the sodium metabisulphite treatment stored at 5°C, that was 18 days. The samples stored at 10°C have the minimum shelf life compared to that of 5°C.

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