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Preservation of the Sugar Cane Juice

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ABSTRACT –

The variety CoP 86032 was selected for preparing sugarcane juice beverage on the basis of yield and sensory attributes from eight promising varieties of sugarcane. Sugarcane juice beverage samples were prepared by pasteurizing the sugarcane juice at 70°C for 10 minutes and adding citric acid (40 mg/100 ml), ascorbic acid (40 mg/100 ml) and potassium metabisulphite (150 ppm) and sodium benzoate . Samples of sugarcane juice beverage were stored at room (30±5°C) and refrigeration (4±2°C) temperature in pre-sterilized glass bottles and analyzed for physico-chemical, microbiological and sensory attributes at every 15 days interval for 180 days. The pH, total soluble solids and total sugars decreased, whereas, titratable acidity and reducing sugars increased significantly (P<0.01) during storage.

An appreciable increase in total plate counts and yeast and mold counts were observed, however, no coliforms, were detected in sugarcane juice beverage during storage. The changes in different attributes were significantly (P<0.01) higher at room temperature as compared to refrigeration temperature. The sugarcane juice beverage having citric acid and potassium metabisulphite showed minimum changes in sensory qualities during storage, both at room and refrigeration temperature. An acceptable quality beverage of sugarcane juice with satisfactory storage stability for 90 days at room as well as refrigeration temperature could be prepared.

KEY-WORD

Sugarcane juice ,KMS (Potassium Permetabisulphate),Na- benzoate ,citric acid

INTRODUCTION

The total production of sugarcane in India is about 271 million tonnes. It is grown mainly for producing sweeteners such as sugar, jaggery and khandasari . A small portion of sugarcane is also utilized for other purposes. Sugarcane juice is available almost throughout the country. But the juice extracted from the canes turns dark brown and marked sedimentation appears during storage. Conventional heat processing imparts the taste of jaggery and the delicate flavour of juice is adversely affected .Sugarcane variety and cultivation practices also affects the juice characteristics. Bucheli and Robinson reported that the polyphenol oxidase is the major enzyme involved in the discoloration of sugarcane juice which can be improved by heat inactivation of enzyme. Addition of citric acid or ascorbic acid to juice also gave good pleasant dull orange colour to juice. Addition of lemon and ginger followed by pasteurization and preservation with sulphurdioxide also reduced physico-chemical changes during storage of ready-to-serve bottled sugarcane juice .

In view of above information, the present investigation was envisaged to select a suitable high yielding variety of sugarcane for juice production and to optimize the process for the manufacture and preservation of ready-to-serve bottled sugarcane juice of high consumer acceptability.

MATERIALS AND METHODS

sugarcane varieties namely Co86032, CoP 265, CoP 1005, CoS 271, CoS 767, CoP 84212, CoP 90223 and CoP 93227 obtained from Crop Research (India) were screened for their suitability for juice production. Canes were cleaned, washed and crushed by hand driven brass crusher to obtain maximum possible juice yield. Juice was filtered through a four layered muslin cloth. Juice yields were recorded and juices were subjected to physico-chemical and sensory evaluation.

Optimization of Treatments

Concentration of citric acid (0, 20, 40, 60 and 80 mg/100 ml), ascorbic acid (0, 20, 40, 60 and 80 mg/100 ml), potassium metabisulphite (KMS) (0, 50, 100, 150, 200 and 250 ppm) and pasteurization temperature (60, 70, 80 and 90°C) for 10 min were studied for optimization of treatments on the basis of sensory evaluation of juice. Concentrations of citric acid 40 mg/100 ml, ascorbic acid 40 mg/100 ml, KMS 150 ppm and pasteurization at 70°C for 10 minutes were found optimum for the treatment of sugarcane juice.

Different lots of sugarcane juices were subjected to pasteurization (at 70°C for 10 min), pasteurization after addition of citric acid (40 mg/100 ml), pasteurization after addition of citric acid followed by addition of potassium metabisulphite (150 ppm), pasteurization after addition of ascorbic acid (40 mg/100 ml) and pasteurization after addition of ascorbic acid followed by addition of potassium metabisulphite. Fresh sugar cane juice was taken as control. All the lots of juices were stored for 90 days at room (30±5°C) and refrigeration temperature (4±2°C). The samples were drawn and analyzed for physic-chemical, microbiological and sensory attributes at an interval of 15 days.

CONCLUSION

On the basis of facts stated above it may be concluded that good quality beverage from sugarcane juice of variety CoP 92226 with satisfactory storage stability of 90 days at refrigeration as well as room temperature could be prepared from pasteurized juice after addition of 40 mg citric acid per 100 ml and 150 ppm of potassium metabisulphite. The citric acid was able to lower the pH of sugarcane juice to 4.9 which gave a preservative action and inhibit the growth of micro-organism during storage. Potassium metabisulphite is also a known yeast and mold inhibitor and is being used widely for the preservation of foods.

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