

Bacteriological Examination of Sugar Cane Juice Used For Human Consumption and Its Health Significance

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ABSTRACT

Sugar cane juice is extensively consumed as a refreshment as well as energetic drink. Sugar cane juice has valuable properties and is regularly consumed along with lemon juice to hepatitis patients. Sugarcane juice suspension taken out 1 ml suspension of 1:10 dilution and transferred on the selective media aseptically for the isolation of the pathogen of *Salmonella typhi*, *Staphylococcus aureus* and *Escherichia coli* by standard plate count method (SPC). The attempt was made to analyze the microbial quality of squeezed sugar cane juices sold in Chikhli market. The presence bacterial pathogen is alarming need to follow safety regulations regarding the public health and hygiene. It is suggested that proper food safety handling and storage for better hygienic and sanitary control must be practiced to avoid any contamination.

Keywords : Sugar cane juice, microbial quality public health and hygiene.

I. INTRODUCTION

Sugar cane juice is extensively consumed as a refreshment as well as energetic drink. Sugar cane juice has valuable properties and is regularly consumed along with lemon juice to hepatitis patients. In many tropical countries the sugar cane juice is a common man's drink and is sold at all municipal localities, benches, park and busy market places. Though in view of their ready utilization extraction, quick methods of cleaning and handling, they might often prove to be community fitness fear¹. The occurrence of native, epiphytic micro flora on sugar cane plant was ascertained².

The demand for the production of safe high quality food, which has both the sensory and nutritional characteristics similar to the raw material used and extended shelf life, is ever growing in the national market³. However, some products, such as sugarcane juice, which is largely consumed in an informal marketplace, are frequently offered and sold

in hygienic and sanitary conditions that are precarious at best. Probable sources of such microbial contamination have been recognized as raw material itself, unclean handling and inadequate cleaning of sugar cane knives, press, clothes, contact surface, ice, vendor's hands and air born contamination. Contaminated raw material used in these drinks has been known to be a source of infectious diseases such as vomiting, nausea, abdominal cramps, typhoid, and diarrhea etc⁴.

The street food industry plays an important role in meeting the food requirements of urban dwellers in many cities and towns of developing countries and the industry feeds millions of people daily with a wide variety of foods that are relatively cheap and easily accessible. Spoilage microorganisms are the main contaminants responsible for the alteration of sugarcane juice; they are the primary cause of chemical, physical and sensory deterioration of the drink. Microbiological spoilage may be accelerated when abusive storage conditions create

significant variations in the pH. Bacterial, molds and yeasts metabolize carbohydrates into acids and gums^{5,6}. This study was undertaken to determine the microbial quality of Sugarcane juice. Sugarcane juice is one of important tools for better health and hygiene due to its nutritive values.

MATERIALS AND METHODS:

Sugarcane juice samples were collected from local market of Chikhli town. Sugarcane juice samples were sealed packed in bottles and analyzed within 2 hrs of collection. Bacteriological analysis of sugarcane juice collected sample was analyzed for bacteriological studies. The bacteriological analysis of sugarcane juice samples was carried out for the total counts of bacteria, yeast and moulds by using standard plate count methods. Sugarcane juice suspension taken out 1 ml suspension of 1:10 dilution and transferred on the selective media aseptically for the isolation of the pathogen of *Salmonella typhi*, *Staphylococcus aureus* and *Escherichia coli* by standard plate count method (SPC). The suspension inoculated on the Eosin Methylene Blue agar, Mannitol salt agar, Bismuth Sulphide agar (BSA) and Potato Dextrose agar. And at last all plates kept into the incubator for the incubation period at 37temperature for 24 hours and observe the colonies next day and count⁷. The isolate of bacteria is characterized and identified according to Bergey’s manual of determinative bacteriology^{8,9}.

RESULTS AND DISCUSSION:

Sugarcane juice is one of the delicious drinks that enjoy a wide popularity in view of its pleasing taste, refreshing tingle and availability during the greater part of the year throughout the country. The main problem associated with fresh sugarcane juice is its short life and heat sensitivity of its flavor. Therefore the drink is mostly sold – fresh by roadsides and small eateries. Therefore, the attempt was made to analyze the microbial quality of squeezed sugar cane juices sold in Chikhli market.

The maximum count of bacteria was recorded in sugarcane juice with ice S-4 samples and count was

282580 cfu/gm. While the lowest count of bacteria was reported in S-3 sample i.e. 159242 cfu/gm which was shown in fig. 4.1. The maximum count of yeast and mould was recorded in S-5 sample of sugarcane juice with ice. The count was 690 cfu/gm. While the lowest count of yeast and mould was reported in S-3 sample i.e. 460 cfu/gm which was shown in fig. 4.2.

The maximum count of bacteria was rcordeed in sugarcane juice without ice S-4 samples. The count was 23320 cfu/gm. The lowest count of bacteria was reported in S-6 sample i.e. 12203 cfu/gm which was shown in fig. 4.3. The maximum count of yeast and mould was recorded in S-6 samples. The count was 640 cfu/gm. While the lowest count of yeast and mould was reported in S-4 sample i.e. 350 cfu/gm of sugarcane juice without ice which was shown in fig. 4.4.

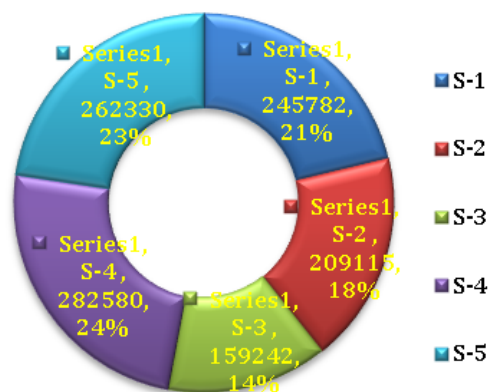


Fig. 4.1 Total viable count of bacteria in sugarcane juice with ice.

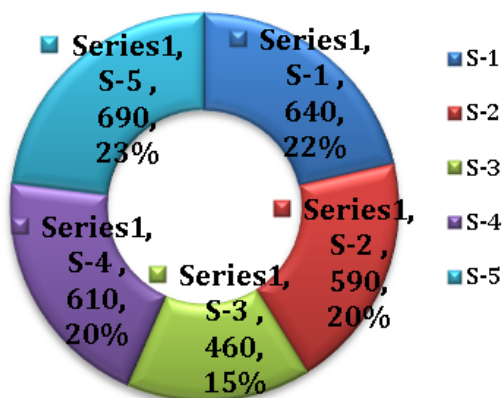


Fig. 4.2 Total viable count of yeast & mould in sugarcane juice with ice.

The pathogenic bacteria were isolated on the selective media. The major four pathogens were analyzed for the presence on soups samples. These pathogens had such as *S. typhi*, *S.aureus*, *P. aeruginosa* and *E.coli*. *E.coli* was present of the given Chinese food sample. The fecal coliform was present in the collected samples of Chinese foods. The four pathogens were present Chinese food. From the positive MacConkey broth tubes, It was observed that Chinese food sample S-1, S-4, and S-8 were shown presence of *E. coli*. It was observed that soup sample S-3 and S-7 were shown presence of *S. typhi*. While, Chinese food sample S-1, S-5 and S-8 were shown presence of *S.aureus*. Chinese food sample S-2 and S-6 were shown presence of *P. aeruginosa*.

Sugar cane juice is extensively consumed as a refreshment as well as energetic drink. Sugar cane juice has valuable properties and is regularly consumed along with lemon juice to hepatitis patients. Though in view of their ready utilization extraction, quick methods of cleaning and handling, they might often prove to be community fitness fear¹. The occurrence of native, epiphytic micro flora on sugar cane plant was ascertained². To ensure that food is microbiologically safe, both food handlers and food itself must be monitored on permanent bases¹¹. The demand for the production of safe high quality food, which has both the sensory and nutritional characteristics similar to the raw material used and extended shelf life, is ever growing in the national market.

II. CONCLUSION

The enumeration of microorganisms at the processing and filling line, in the packages and in the end product showed low levels of contamination. Furthermore, a beverage with a high sensory acceptance was achieved. The main problem associated with fresh sugarcane juice is its short life and heat sensitivity of its flavor. The presence bacterial pathogen is alarming need to follow safety regulations regarding the public health and hygiene. It is suggested that proper food safety

handling and storage for better hygienic and sanitary control must be practiced to avoid any contamination. Additionally, standard procedures of operational hygiene were implemented to produce a drink that is safe and maintains an elevated sensory quality.

III. REFERENCES

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