

How Safe is Sugarcane Juice?

Dear Editor,

Sugarcane juice is a popular refreshing drink in many parts of Karnataka. It is extracted by crushing the sugarcane between roller drums and served with or without added ice. Often sugarcane juice is used as a remedy for jaundice in folk medicine. Hygienic standards are usually not maintained during the transport of sugarcane from field to the point of extraction and preparation of juice. Further, the juice is

consumed unpasteurised. Therefore, it is possible that the sugarcane juice may be contaminated and pose health hazards. We report here the bacteriological analysis of sugarcane juice sold in the parlors in Mangalore, Karnataka.

Sugarcane juice parlors located in different parts of Mangalore were identified. Fresh sugarcane juice (150 mL)

samples were collected in sterile screw capped containers and processed within 30 minutes after the collection. Sugarcane juice was diluted 10- folds in phosphate buffered saline (pH 7.3) and bacterial count was determined by surface plating on blood agar and MacConkey agar plates.¹ For the isolation of *Salmonella* spp. and *Shigella* spp, sugarcane juice (50 mL) was inoculated into equal volumes of double strength selenite F broth and incubated at 37°C for 12 hours. Subculture was done on desoxycholate citrate agar. For the isolation of *Vibrios*, 50 mL of sugarcane juice was inoculated to equal volume of double strength alkaline peptone water (pH 8.6), incubated at 37°C for 6 hours and subcultured on thiosulphate citrate bile sucrose agar. Identification of bacteria was done using standard methods.²

All the 50 samples of sugarcane juice examined were contaminated with different bacteria. The bacterial count for the isolates ranged between 10^5 to 10^7 cfu/mL (Table). *Salmonella*, *Shigella* and *Vibrios* were not isolated. No hygienic standards were observed either during transport or extraction of sugarcane juice. The glasses used for serving were washed by immersing in the same bucket of water.

The present study revealed heavy bacterial contamination of sugarcane juice. Presence of *Escherichia coli*, other

coliforms and enterococci indicate faecal contamination of sugarcane juice, suggesting possible risk of infection involved with drinking such sugarcane juice. Since pathogens enter sporadically and many do not survive long, they may be missing in samples collected for analysis.³ *Staphylococcus aureus* is an enterotoxin producer that can cause food poisoning. The fact that all the samples of sugarcane juice were contaminated is a matter of concern. Bacterial contamination of sugarcane juice may occur at different stages such as by contamination of sugarcane, roller drum crushers, collecting vessels, ice added to the juice, hands of the personnel and the filter. Further, sugarcane attracts flies that may contaminate the juice. Health education of the vendors and implementation of standard hygienic protocols may reduce contamination of sugarcane juice.

References

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Table: Bacteriological analysis of sugarcane juice

Bacteria isolated	No. of samples contaminated
<i>Escherichia coli</i>	25
<i>Klebsiella pneumoniae</i>	18
<i>Staphylococcus aureus</i>	10
<i>Enterobacter</i> spp.	6
<i>Citrobacter</i> spp.	6
<i>Pseudomonas aeruginosa</i>	4
<i>Enterococcus faecalis</i>	3
<i>Acinetobacter</i> spp.	2
<i>Bacillus subtilis</i>	2