



Identification of coliform bacteria contained ice tea at night market WTB

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Abstract

Ice tea is a drink that is popular with the public because the price is very affordable and is often used as a food companion. Iced tea drinks are made using water and ice which is one source of Coliform bacteria contamination. The purpose of this study was to determine the presence or absence of *Coliform bacteria* in iced tea drinks at the WTB night market. The method used is the MPN (Most Probable Number) index method and the results obtained are 5 samples from various sellers at the WTB Night Market, obtained from 5 samples containing bacteria because the results have a very high index value, namely $< 979/100$ ml which indicates that the quality of the iced tea water is also very poor. From the results of the study, it can be concluded that the iced tea sold at the WTB Night Market has been contaminated by *Coliform bacteria*.

Keywords: colletotrichum, Ethiopia, keitt, kent, mango, pathogenicity

Introduction

One drink that is very popular with the community is iced tea. Ice tea is a drink that is popular with the public because the price is very affordable and is often used as a food companion. Iced tea drinks are made using water and ice which are one source of *Coliform bacterial* contamination (Permenkes, 2010) [7]. *Coliform bacteria* are a group of bacteria as an indicator of the presence of other pathogenic bacteria because the number of colonies is related to the presence of pathogenic bacteria, and this can be used as the most widely used indicator to indicate a sanitation problem. The presence of *Coliform bacteria* in water and food is considered to have a high correlation with the discovery of pathogenic bacteria in food that will cause diseases such as mild to severe diarrhea or poisoning (Isnawati, 2012) [14]. Diarrhea can be caused by coliform bacteria found in water, consisting of *Escherichia coli*, *Kleibsellia*, etc. These bacteria are only found in human or animal feces, and are not found in clean water. Based on research on food management sites, it was found that *Escherichia coli* contamination in restaurants in South Jakarta was 26.3%, this number was the highest number compared to street vendors (22.4%) and catering services (11.8%). The contamination is influenced by materials for making food and beverages and contamination by water. Research conducted by Muh. Nurma A in 2015, regarding the Identification of Coliform Bacteria in iced tea in the West Padang, it was found that 13 out of 14 samples were positive for *Escherichia coli* (Ariefransyah, 2015). This research was conducted with the aim of knowing the quality of the iced tea sold in the WTB night market based on the microbiological requirements stipulated by the Regulation of the Minister of Health no. 492 of 2010 concerning the requirements for drinking water quality.

Methods

Tool

The tools used in this research are: test tube, test tube rack, Durham tube, measuring pipette, hotplate, stirring rod, autoclave, cotton, aluminum foil, incubator, buncen, Erlenmeyer, needle loop, oven, magnet stirrer, and objects glass, LAF (*Laminar Air Flow*).

Materials

Iced tea samples, Alcohol, LB (*Lactose Broth*) Agar Media, BGLB (*Brilliant Green Lactose Broth*) Agar Media.

Tool Sterilization

First, wash all the tools that will be used, clean them with a tissue or napkin and then put them in the oven at 50°C for 30 minutes, after all the tools are dry, cover the tools with aluminum foil and put them in the autoclave at 121°C for 15 minutes, then after 15 minutes the tool can be used. Furthermore, the researchers washed their hands using running water and used gloves that had been washed with 70% alcohol wearing masks and work clothes in the laboratory to protect themselves.

Preparation of LB (*Lactose Broth*) Agar Media

Weigh 3.9 grams of LB (*Lactose Broth*) powder into an erlenmeyer. After that add 500 ml of distilled water and place it on a magnetic stirrer, then the homogeneous solution is heated using an electric stove until it boils, then prepare a test tube that has been inserted in the Durham tube first and then divide each solution as much as 10 ml. then cover again using cotton and put in an autoclave to be sterilized for 30 minutes at a temperature of 121°C.

Production of BGLB (*Brilliant Green Lactose Broth*) Agar Media

Weigh 12 grams of BGLB (*Brilliant Green Lactose Broth*) powder, put it in an erlenmeyer. After that add 500 ml of distilled water and place it on a magnetic stirrer, then the homogeneous solution is heated using an electric stove until it boils, prepare a test tube that has been inserted in the Durham tube first and then divide each solution as much as 10 ml. then cover again using cotton and put in the autoclave to be sterilized for 30 minutes at a temperature of 121°C.

Presumptive Test

After the media is sterilized, move the test tube that has been filled with media into the LAF (*Laminar Air Flow*) after that pipette the sample that has been liquefied first into 5 test tubes as much as 10 ml, then in 1 test tube insert 1 ml of sample, and In the next tube, enter 0.1 ml of the sample. After all the samples are ready, put them in incubation for 24 hours at 37° C and observe the results, if there are bubbles, the results are positive (+) containing bacteria, so the next test must be carried out.

Confirmative Test

The results of the positive (+) *presumptive test* will be continued with a *confirmative test*. Positive samples were scratched with 1-3 ose needles and then put into BGLB media, after that incubated again for 24-48 hours at 37° C in order to get maximum results.

Data Analysis

The research was descriptive in nature, namely knowing the presence or absence of *Coliform bacteria* in the iced tea samples found at the WTB night market, and to determine the number of bacterial indexes contained in the screwdriver tea samples, the researchers used the MPN (*Most Probable Number*) method series 5-1-1. according to the Thomas formula table (Nurtulawati, 2012).

Results and Discussion

From the research conducted, the following results are obtained:

Presumptive Test

The results of the presumptive test that have been carried out by inoculation of the sample into the Lactose Broth (LB) medium, double series tube 5-1-1, each filled with 10 ml, 1 ml, 0.1 ml samples. a total of 35 tubes used. And in the presumptive test on 5 samples of iced tea screwdriver (1,2,3,4,5) which the results were positive for bacteria, because after incubation for 24 hours air bubbles formed in the Durham tube and the sample became cloudy. (Table 1)

Table 1: Presumption Test Results

Sample	Positive Tube Results (+)		
	5 x 10 ml	1 x 1 ml	0,1 x 1 ml
Sample 1	5	1	1
Sample 2	5	1	1
Sample 3	5	1	1
Sample 4	5	1	1
Sample 5	5	1	1

Confirmative Test

From the confirmative test on 5 samples of iced tea. A positive result is indicated by the sample becoming cloudy and there are air bubbles indicating that the sample contains Coliform bacteria. All samples were found to be positive for bacteria and the MPN index value was < 979/100 ml. (Table 2)

Table 2: Confirmation Test Results

Sample	Positive Tube Results (+)			MPN Index per 100 ml
	5 x 10 ml	1 x 1 ml	0,1 x 1 ml	
Sample 1	5	1	1	< 979
Sample 2	5	1	1	< 979
Sample 3	5	1	1	< 979

Sample 4	5	1	1	< 979
Sample 5	5	1	1	< 979



Fig 1: Positive Estimator Test



Fig 2: Positive Affirmation Test

From the *confirmative test* on 5 samples of iced tea screwdriver. A positive result is indicated by the sample becoming cloudy and there are air bubbles indicating that the sample contains Coliform bacteria. All samples were found to be positive for bacteria and the MPN index value was <979/100 ml.

Conclusion

Based on the results of the bacteriological test of screwdriver tea sold at the WTB night market, the following conclusions were obtained is 1. Iced tea sold at the WTB Night Market of the five (5) samples, all of them were positive (+) containing bacteria so they did not meet the requirements of the Regulation of the Minister of Health of the Republic of Indonesia No.492/MENKES/PER/IV/2010 which also states that drinking water must not contain *Escherichia coli* in 100 ml. All samples of iced tea examined had an MPN index value of <979/100 ml, this means that iced tea drinks are not suitable for consumption. And the process of processing or making screwdriver tea does not meet the standards of Kepmenkes RI No. 942/Menkes/SK/VII/2003 concerning sanitation during the process of making food and beverages.

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