

31
ABSTRACTS

**10TH CONGRESS AND
INTERNATIONAL CONFERENCE OF
INDONESIAN SOCIETY FOR MICROBIOLOGY
(ICISMI)**

**RECENT ADVANCE OF
MICROBIOLOGY IN HEALTH,
BIO-INDUSTRY, AGRICULTURE AND
ENVIRONMENT**

**JW. MARRIOTT HOTEL
Surabaya, 20th -21st NOVEMBER 2009**



Organization of
Indonesia Society for Microbiology
(ISM) Surabaya Branch



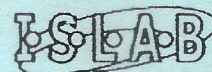
Institute of Tropical Disease
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International Union of
Microbiological Societies



American Society for Microbiology



Indonesian Society for
Lactic Acid Bacteria

10th Congress and International Conference of Indonesian Society for Microbiology

Foreword

Chairman of the Organizing Committee

Dear Participants,

On behalf of the Organizing Committee, I would like to extend my warmest welcome to all participants of 10th Congress and International Conference of Indonesian Society for Microbiology, 19th – 21st November 2009 with theme "The recent Advances of Microbiology in Health, Bio-industry, Agriculture and Environment".

It is expected that the conference will serve as a forum for promoting advanced microbiology, sharing experience and information, which will be of importance to the development of biotechnology base on microbiology with the regard to economic growth, social welfare and bio-safety.

The conference is attended 500 participants from national and international. Finally we thank to all of companies and institutions participate in the exhibition and joint in this conference.

I wish every success to all participants and I hope you still have spare time to enjoy Surabaya.

Prof. Fedik A. Rantam, DVM, Ph.D.

Chairman of Organizing Committee-ICISMI

Contents

Foreword Chairman of the Organizing Committee.....	i
Organization	ii
Main Speaker	iv
Contents.....	v
Time table.....	vi
Main Speaker Abstracts List	xiii
Health Free Paper Abstracts List.....	xiv
Industry Free Paper Abstracts List	xvii
Agriculture Free Paper Abstracts List	xix
Main Speaker Abstracts	1
Health Oral Presentation Free Paper Abstracts.....	31
Health Poster Presentation Free Paper Abstracts.....	50
Industry Oral Presentation Free Paper Abstracts.....	82
Industry Poster Presentation Free Paper Abstracts.....	102
Agriculture Presentation Free Paper Abstracts.....	116
Agriculture Poster Presentation Free Paper Abstracts.....	136
Acknowledgments	157

**QUALITATIVE STUDY of *ESCHERICIA COLI* in MINERAL WATER
REFILL CENTER in SUMBERSARI, JEMBER**Dini Agustina⁽¹⁾, Diana Chusna Mufida⁽²⁾

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ABSTRACT

Peoples need water to support their life, in this case water that suitable to drink. Recently, most of them consume refill mineral water which had no quality control. One of indicators of drinking water's quality for health was *Eschericiae coli*. *E. coli* presence in the water indicates that the water was contaminated by fecal material. To evaluate the presence of *E.coli* bacteria in the mineral water refill center in Summersari Jember, the "Bacteriologic water study" was done. Sampling technique used in this study was *total sampling*. This study use Qualitative approach with 2 stages: *Presumptive Test*: 3 3 3 tube method to count the Most Probable Number (MPN) of Coliform bacteria, then *Confirmed Test*: cultivate the positive result on Presumptive Test to the Eosin Metilen Blue (EMB) Agar. Results of this study ; three water sample (33%) had MPN *E. coli* bacteria more than 0 / 100 ml, grew well on EMB Agar with saw metallic sheen. Conclusion : Three water sample were contaminated by *E.coli*.

Key words: *E. coli* , contamination, refill mineral water.



QUALITATIVE STUDY of *ESCHERICIA COLI* in MINERAL WATER REFILL

CENTER in SUMBERSARI, JEMBER.

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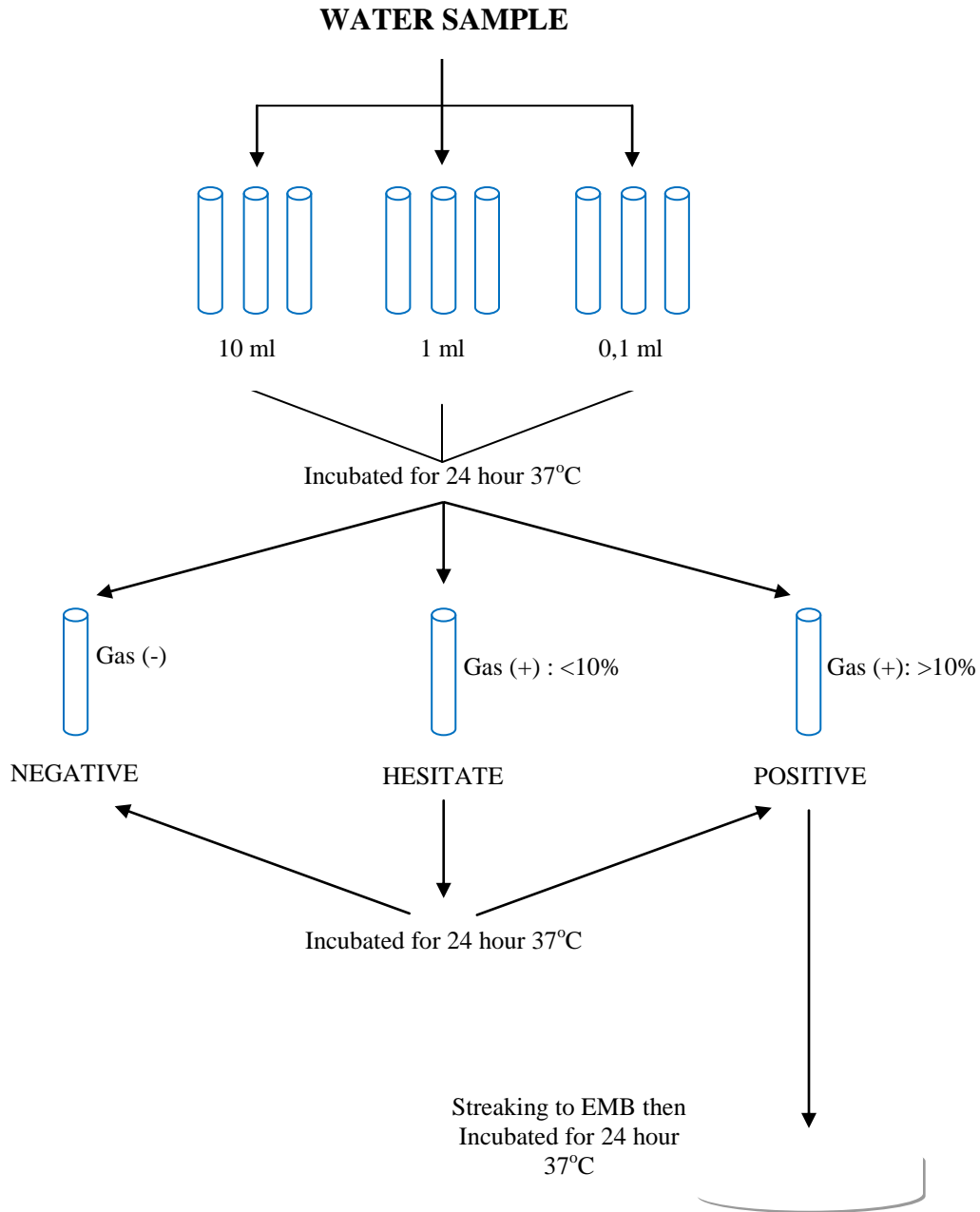
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Introduction

Human needs water to drink to support their life. Not all water can be directly drink, a high quality fresh water and cooked water is the water we need. Parameters of water's quality need to be checked in the laboratory which have direct link to health is *Escherichia coli* and total bactory coliform. Modern people especially who lives in urban mostly choose to consume packed mineral water so that they do not need to cook it first, but they thought that the price of it still too high. Because of it, people established refill mineral water centers to reduce the price of drinking water. The problem is they still do not have a good quality control of it. On the other side, health status in Jember, incidence of Diarrhea in jember in 2006 is about 60.781 cases and 3.630 (35,4%) of them occurred in Summersari area. It was the highest incidence in Jember in 2006. Based on that reason, we need to do some bacteriological research of few samples from all mineral water refill centers in Summersari area to see the amount of *E.coli* as indicators of water properness as drinking water

Research Method

This research used cross-sectional study to examine coliform bacteria contamination in refilled mineral water in Summersari area of Jember.



Gambar 3.1 procedure of research

RESULT

The analysis of water sample were conducted by doing 2 phase of qualitative test, which were presumptive test and confirmed test. MPN were done to evaluate the highest guessing number of *E.coli* on sample.

On presumptive test after incubated for 24 hours, changes were appeared in media color from violet into yellow dan gasses appear inside of Durham tube. This result assumed as positive presumptive test as seen on picture 1.



Picture 1

All sample were inoculated in liquid lactose media and incubated for 24 hours at 37°C, the result were 3 positive sample as seen on table 2.

Table 2. presumptive data of mineral water refill centers.

No.	Refill center name (Sample)	Positive tube result			MPN coliform per 100 mL sample
		10 mL tube	1 mL tube	0,1 mL tube	
1	Rafflesia	3	0	0	23
2	Dewi Murni	3	1	0	43
3	UD. A. 27	3	3	0	240
4	AIR JAYA	0	0	0	0
5	TIRTA MAS	0	0	0	0
6	Aqua Shuttle	0	0	0	0
7	Tirta Putri	0	0	0	0
8	NAGK	0	0	0	0
9	Sumber Bening	0	0	0	0

The tube that showed positive result on presumptive test were being tested using confirmed test by doing culture on EMB agar media. The result was positive as seen on table 3.

Table 3. Results of Confirm test

No.	Refill center names (Sample)	Tube series (ml)	Tube number	Result
1	Rafflesia	10	1	Positive
		10	2	Positive
		10	3	Positive
2	Dewi Murni	10	1	Positive
		10	2	Positive
		10	3	Positive
		1	1	Positive
3	UD. A. 27	10	1	Positive
		10	2	Positive
		10	3	Positive
		1	1	Positive
		1	2	Positive
		1	3	Positive

Water sample that were inoculated into EMB agar media using streaking method will give positive result as "Green Metallic sheen" colonies as seen on picture 2.



Green Metallic Sheen

Picture 2. EMB media that showed E.coli growth

Discussion

Nine sample of refilled mineral water in Summersari area of Jember were examined qualitatively using two phase of test, there were presumptive test and confirmed test. After incubated for 24 hours can be seen that three water sample from three mineral water refill centers showed positive result on presumptive test as well as confirmed test. This result is opposite with Indonesian health minister's rule No.907/Menkes/SK/VII/2002 about good quality and properness of drinking water. Based on the result of this research, refill centers that have positive result was Dewi Murni, Rafflesia and UD A 27. They uses same source for their water which was SariQua Artesis Alami that took water from Glenmore area, Banyuwangi district. This water

source also use by other refill center but showed negative result in presumptive and confirmed test. It happened because of difference in environmental hygiene and sanitation of each refill center

Conclusion and Suggestion

From the research we conducted, we concluded that from nine refill center operating in Summersari, Jember, three of them were contaminated by E.coli bacteria. It means that those three refill center did not qualified for properness as drinking water. For that reason, needed some education given by health department continuously about environmental hygiene and sanitation and also tools standardization of the refill center. This education can be done by placing poster, leaflet, etc..

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