DETECTION OF *LISTERIA MONOCYTOGENES* IN PASTEURIZED MILK SOLD IN SUPERMARKETS IN BOGOR CITY AND ITS RELATIONSHIP WITH HUMAN HEALTH

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ISSUES RELATED TO THIS THESIS AND THE SOURCE OF INFORMATION

With this I declare that this thesis Detection of *Listeria monocytogenes* in Pasteurized Milk Sold in Supermarkets in Bogor City and its Relationship with Human Health is my own work under the direction of an advisory committee. It has not yet been presented in any form to any Education institution. The sources of information which is published or not yet published by other researchers have been mentioned and listed in the references of this thesis.

Bogor, January, 2008

Robert Kibuuka

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ABSTRAK

ROBERT KIBUUKA. Detection of Listeria monocytogenes in Pasteurized Milk Sold in Supermarkets in Bogor City and its Relationship with Human Health. Dibimbing oleh MIRNAWATI SUDARWANTO dan AGATHA WINNY SANJAYA.


Kata kunci: Listeria monocytogenes, susu pasturisasi, jumlah coloni, kesehatan manusia.
SUMMARY

ROBERT KIBUUKA. Detection of *Listeria monocytogenes* in Pasteurized Milk Sold in Bogor City and its Relationship with Human Health. Under direction of MIRNAWATI SUDARWANTO and AGATHA WINNY SANJAYA.

*Listeria monocytogenes* is a foodborne bacterium recognized as pathogenic for both humans and animals. Because of its versatility, *Listeria* is able to persist in the food industry environment for several years, probably in a biofilm state. Post – processing contamination of food with *L.monocytogenes* is a critical problem of public health. Several outbreaks of listeriosis were linked with the consumption of minimally processed and ready to eat (RTE) foods. Because of this, many countries have established a zero tolerance policy, under which RTE foods contaminated with *L.monoctyogenes* at a detectable level are deemed adulterated.

It is a Gram-positive bacterium, non-spore forming bacilli. *Listeria* is aerobic or facultative anaerobic, catalase positive and oxidase negative and tolerates low water activity. It is also capable of growing between 4°C to 37°C and has a unique tolerance to low water activity. Temperature of 4°C is generally regarded as safe for storage of foods. Pasteurization is a world-wide heating process used to reduce bacterial populations present in milk. The two methods include high temperature short time (HTST) at 71.7°C for 15 seconds and low temperature long time (LTLT) at 61.7°C for 30 minutes.

The research was done in two parts. The first part was to qualitatively identify the presence of *Listeria monocytogenes* in pasteurized milk sold in different Supermarkets in Bogor City. The method was adopted from the *Bacteriological Analytical Manual / Food and Drug Administration* (FDA 2003). All the samples tested negative to *Listeria monocytogenes*. The second part of the research was to evaluate the growth of *L. monocytogenes* in sterile milk stored in the refrigeric incubator set at 4°C and monitored for 7 days. The original *L.monoctyogenes* culture at a concentration of 1x10⁹ cfu/ml was diluted with Buffered Phosphate Water (0.1%) to achieve a cell concentration of approximately 1.0 x 10² cfu/ml. Eight clean and sterile erlenmeyers were aseptically filled, and then a 0.1ml of it was aseptically pipetted into each of the seven erlenmeyer with codes E1 to E7. E8 was not inoculated with *L. monocytogenes* because it was the control sample. All the erlenmeyers were stored in the refrigerator set at 4°C. Growth was monitored on nutrient agar plates incubated at 37°C for 24 – 48 hours. Colonies were then counted using the quebec colony counter. *Listeria monocytogenes* maintained its population relatively well in sterile milk stored at 4°C. Growth was observed on the first, second, third, fourth and fifth day. On the sixth day and the seventh day, the numbers of colony forming units observed were almost similar. A population of 10cells is enough to cause serious listeriosis in humans.

*Kata kunci: Listeria monocytogenes, susu pasturisasi, jumlah coloni, kesehatan manusia.*
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DETECTION OF LISTERIA MONOCYTOGENES IN
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CITY AND ITS RELATIONSHIP WITH HUMAN HEALTH

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