

Listeria Monocytogenes Contamination Study in Food from Plant Origin in the Market

Sri Bintang Kusumo Winahyu

DNM, MSi, JI. Warga I MA No. 41 Pejaten Barat Pasar Minggu Jakarta which can pose a danger to human health 12510 - Indonesia

*Corresponding author

Sri Bintang Kusumo Winahyu DNM, MSi, JI. Warga I MA No. 41 Pejaten Barat Pasar Minggu Jakarta which can pose a danger to human health 12510 - Indonesia. E-mail: bintang_31@hotmail.com

Submitted: 21 May 2019; Accepted: 25 June 2019; Published: 15 July 2019

Abstract

Fresh food from plants is fresh food that is consumed directly or after cutting, I have minimal processing. Therefore PSAT to be consumed must be safe from aspects of microbial contamination and physical chemical contamination. There are several types of pathogenic microbes, which can contaminate PSAT and can cause disease disorders. One microbe, which includes pathogenic microbes and potentially contaminates PSAT, is *Listeria monocytogenes*. Microbes *Listeria monocytogenes* are pathogenic in certain groups of people in small amounts.

To know the prevalence of *Listeria monocytogenes*, studies were carried out, by taking samples at locations, and selected commodities. The locations chosen are West Java, Banten and DKI Jakarta in two traditional markets in each province. While the selected commodities are bean sprouts, tomatoes and cabbage. Sampling was carried out by random method, with the population in accordance with the number of vegetable traders in that location. Testing of samples for *Listeria monocytogenes* contamination is carried out in accredited laboratories.

From the results of testing of 300 (three hundred) samples, consisting of 100 samples of bean sprouts, 100 samples of tomatoes, and 100 samples of cabbage, all test samples were declared negative or unexposed to *Listeria monocytogenes*.

Review method

The method used in the assessment of *Listeria monocytogenes* contamination in Fresh Product, is determine the location and sampling method, determine the selected type of commodity to take for samples, establish an accredited test laboratory to conduct testing and evaluate the results of the review.

Taking into account financial support, three selected provinces were chosen to take samples. The provinces include: DKI Jakarta province, West Java province and Banten province. In DKI Jakarta province, there are 2 municipalities with the highest population, namely the southern Jakarta municipalities (Pasar Minggu and Pasar Kebayoran Lama) and East Jakarta municipalities (Kramatjati Market and Klemder Market). West Java Province, determined by 2 municipalities or regencies, namely Bogor (Bogor market and Anyar market) and Bandung Regency (Lembang market and caringin market). Banten Province, selected Tangerang Regency (Serpong Market and High Land) and Serang District (Attack Market and New Market) [1-10].

The number of samples taken, according to the method that has been set, and in accordance with the population specified. Samples that has been taken, carried in a cold chain (with ice box equipped with blue ice) to ensure the freshness and condition, then sent to

the laboratory, by courier pickup.

Result and Discussion

Of the 300 test samples, which were tested and consisted of, 100 samples of bean sprouts, 100 samples of cabbage and 100 samples of tomatoes, all samples were negative (-), against *Listeria monocytogenes* contamination. This means, in the provinces of Banten, DKI Jakarta and West Java, the prevalence of *Listeria monocytogenes* in PSAT sold in traditional markets is absent.

The absence of *Listeria monocytogenes* in PSAT can be caused because *Listeria monocytogenes* is a pathogenic microbe that can only survive at sub-tropical temperatures (4-10 degrees Celsius). Microbial *Listeria monocytogenes* is not a microbe that has a high ability to live, if it has to compete with other microbial pathogens, which are stronger such as *Salmonella* sp. Thus a negative test result can be caused due to

- The temperature at the time the commodity is sold, does not match the temperature requirements for life and *Listeria monocytogenes* microbial growth
- *Listeria monocytogenes* microbes lose unable to compete or not survive because they have to compete with other pathogenic bacteria, such as *Salmonella* sp

Conclusion

Of the 300 samples of fresh food consisting of 100 samples of bean sprouts, 100 samples of tomatoes and 100 samples of cabbage, no *Listeria monocytogenes* microbial contamination was obtained. A sample above was taken from 12 traditional markets located in West Java province (Bogor City and Lembang Regency), DKI Jakarta province (South Jakarta and East Jakarta) and Banten province (Serang district and Tangerang Regency).

Follow Up Suggestion

Although the prevalence of *Listeria monocytogenes* in PSAT sold in traditional markets is not found, it is still necessary to study the prevalence of *Listeria monocytogenes* against PSAT sold in the modern retail market, given the living habitat of *Listeria monocytogenes* in temperatures between 4-10 degrees Celsius.

References

1. Ariyanti T (2010) Bakteri *Listeria monocytogenes* Kontaminan Makanan Asal Hewan (Foodborne Disease). *Wartazoa* 20: 94-102.
2. Beuchat LR, RE Brackett, DYY Hao, and DE Conner (1986) Abstract: Growth and thermal inactivation of *Listeria monocytogenes* in cabbage and cabbage juice. *Canadian Journal of Microbiology* 32: 791-795.
3. Christopher T, O Prior and D O'Beirne (1999) Survival and growth of *Listeria* species in a model ready-to-use vegetable product containing raw and cooked ingredients as affected by storage temperature and acidification. *International Journal of Food Science and Technology* 34: 317-324.
4. Codex Alimentarius Commission (2009) Alinorm 09/32/13. Joint FAO/WHO Food Standards Programme CAC Thirty Second Session Rome Italy. Report of the Fortieth Session of The Codex Committee on Food Hygienity, Guatemala City. Guatemala 1-5.
5. Jeyaletchumi P, Tunung R, Margaret SP, Son R, Ghazali FM, et al. (2010) Quantification of *Listeria monocytogenes* in salad vegetables by MPN – PCR. *International Food Research Journal* 17: 281-286.
6. Johnston LM, L Jaykus, D Moll, MC Martinez, J Anciso, et al. (2005) A Field Study of the Microbiological Quality of Fresh Produce. *Journal of Food Protection* 68: 1840-1847.
7. Johnston LM, Jaykus LA, Moll D, Martinez MC, Anciso, et al. (2005) A Field Study of the Microbiological Quality of Fresh Produce. *J Food Prot* 68:1840-1847.
8. Shrinithiviahshini ND, M Sheelamary, D Mahamuni, R Chithradevi (2011) Occurance of *Listeria monocytogenes* in Food and Ready to Eat Food Products Available in Tiruchirappali, Tamil Nadu, India. *World Journal Life Science and Medical Research* 1: 70-75.
9. Susilawati A (2002) Microbiology Security and Vegetable Field Surveys at the Farmer Level and Traditional Markets in the Bogor Region.
10. Suslow TV, MP Oria, LR Beuchat, EH Garret, ME Parish, et al. (2003) Production Practices as Risk Factors in Microbial Food Safety of Fresh and Fresh Cut Produce. *Comprehensive Reviews In Food Science And Food Safety* 2: 38-77.

Copyright: ©2019 Sri Bintang Kusumo Winahyu. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.