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Listeria and Escherichia Coli

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Listeria and Escherichia Coli

Listeria

Listeria is a species of pathogenic bacteria that is the source of listeriosis infection. This is an antonym anaerobic bacterium, which can survive with or without oxygen. Notably, it is one of the most toxic pathogens where 20 to 30% of foodborne listeriosis infection may prove to be fatal especially on high-risk individuals (Ducic et al., 2016). In the US, it is estimated that these infections cause over 1,500 illnesses and 250 deaths per year. This bacteria's ability to grow at very low temperatures makes it easy for its multiplication at regular temperature of refrigeration. Therefore, it is hard to control it especially in human food products such as meat.

Temperature has outstanding effects on the survival of listeria monocytogenes. When exposed to low temperature over a long period, the bacteria's membrane becomes rigid thus reducing its metabolic rate. However, the bacterium grows its articulation of gene needed in cell membrane operation, production of several molecular plans and cold disturbance proteins or keep its fairly steady internal state (Ducic et al., 2016). Even if long durations of freezing may not activate marked inactivation, the application of HPP at lower than zero temperature may lead to destruction and quality improvement of pathogens. This may lead to destruction of cells; however, their recovery may result from favorable conditions of the surrounding.

Studies have shown that the bacteria can grow even at refrigeration temperatures and pull through in freezing temperatures. Frozen storage and freezing of foods have been examined and they may not induce inactivation of several detrimental micro-organisms. The only effect it may have is limiting the pathogen's growth. An investigation ranging from three to twenty-one days done on frozen chicken breast at 4 to 8 degrees Celsius shows that bacterial loads of listeria

monocytogenes were different from others with different temperature levels. However, this does not undergo any significant change over time.

E. Coli

Escherichia coli (E. Coli) is a bacterium mainly found to be living inside human beings' intestines and guts of different animals. Most of the bacteria strains are harmless and even assist in keeping the digestive tract fine. On the contrary, some of the bacterium strains are lethal and can lead to diarrhea if a person consumes contaminated foodstuff. Many people only relate E. coli with food poisoning. Research has shown that it is possible to get urinary tract contamination from other types of bacteria. Additionally, a statistic of 76% to 94% of urinary region contaminations is related to E. coli (Manios & Skandamis, 2015).

Studies have shown that freezing time may have significant effects on meat product quality due to the decrease of the number of healthy cells by E. coli pathogens. Despite reducing slightly, this statistic is significant in indicating the effects low temperature has on the bacteria. Further storage does not cause any significant alteration to the population of the pathogen. E. coli cells will grow at a high-temperature range of almost 40 degrees Celsius (Sukumaran et al., 2018). Thus, when subjected to very low temperatures, very minimal growth is witnessed. Low temperature does not kill the bacterium but stagnates their growth.

Experiments related to freezing time of meat products have shown that the bacterium will grow slightly at low-temperature levels. The chances of injuries occurring to cells may be confirmed through the difference between pathogens counts on selective and non-selective media. Cells are subjected to stress which could lead to reversing or non-reversing of mechanical injuries done to the meat product. Similarly, combined effects of sequential exercises may have

relevant impact on heat resistant nature of pathogens, in comparison to only one single treatment applied. Long-term freezing may damage cells entirely leading to damaging the quality of the meat product (Miya et al, 2014).

References

- Ducic, M., Klisara, N., Markov, S., Blagojevic, B., Vidakovic, A., & Buncic, S. (2016). *The Fate and Pasteurization-Based Inactivation of Escherichia Coli O157, Salmonella Typhimurium and Listeria Monocytogenes in Dry, Fermented Sausages*. Food Control 59 (2016) 400e406.
- Manios, S. G., & Skandamis, P. N. (2015). *Effect of Frozen Storage, Different Thawing Methods and Cooking Processes on The Survival of Salmonella Spp. And Escherichia Coli O157:H7 In Commercially Shaped Beef Patties*. Meat Science 101 (2015) 25–32.
- Miya, S., Takahashi, H., Hashimoto, M., Nakazawa, M., Kuda, T., Koiso, H., & Kimura, B. (2014). *Development of A Controlling Method for Escherichia Coli O157:H7 And Salmonella Spp. In Fresh Market Beef by Using Polylysine and Modified Atmosphere Packaging*. Food Control 37 (2014) 62e67.
- Sukumaran, A. T., Holtcamp A. J., Englishbey, A. K., Campbell, Y. L., Kim, T., Schilling, M. W., & Dinh T. T. N. (2018). *Effect of Deboning Time on the Growth of Salmonella, E. Coli, Aerobic, and Lactic Acid Bacteria During Beef Sausage Processing and Storage*. Meat Science 139 (2018) 49–55.

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