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ABSTRACT

Title of Abstract : Analysis of Escherichia coli Contamination in Frozen Beef and Food Safety Implications in Balikpapan City
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Background : Escherichia coli presence in animal-derived foods serves as a crucial indicator of hygiene and sanitation standards throughout handling, storage, and distribution. Frozen beef distributed to consumers risks contamination when food safety controls, particularly cold chain maintenance, are inconsistently implemented. This study assessed E. coli contamination levels in frozen beef marketed in Balikpapan City and evaluated compliance with the Maximum Contaminant Limit (MCL) under SNI 7388:2009.

Objective : This study aimed to assess the contamination level of E. coli in frozen beef marketed in Balikpapan City and to evaluate its compliance with the Maximum Contamination Limit (MCL) established by SNI 7388:2009.

Research Methods/ Implementation Methods : A quantitative descriptive design with a laboratory testing approach was used. A total of 65 frozen beef samples were collected from modern retail outlets, slaughterhouses (RPH), and cold storage facilities. Laboratory examination was conducted through isolation, identification, and colony counting stages using standard microbiological method. The results were analyzed descriptively and compared with the MCL standards specified in SNI 7388:2009.

Results : Analysis revealed that 55 samples (84.62%) contained E. coli levels below 1×10^2 CFU/g, complying with MCL requirements. However, 10 samples (15.38%) exceeded this limit, indicating non-compliance with food safety standards. These findings suggest potential contamination during post-slaughter handling, storage, or distribution phases, likely due to inadequate cold chain maintenance.

Conclusion/Lesson Learned : In conclusion, the majority of frozen beef circulating in Balikpapan is considered safe for consumption; however, strengthening sanitation practices and ensuring strict cold chain management are recommended to minimize potential public health risks.

Keyword : Escherichia coli, frozen beef, food safety, sanitation, Balikpapan