

EFFECT OF BACTERIOPHAGE CONCENTRATION AND STORAGE TIME ON *ENTEROBACTERIACEAE* REDUCTION IN CHICKEN MEAT

LEOVRITTA MASALUN



**STUDY PROGRAM OF VETERINARY SCIENCES
SCHOOL OF VETERINARY MEDICINE AND
BIOMEDICAL SCIENCES
IPB UNIVERSITY
BOGOR
2026**



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B0401221811



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ABSTRACT

LEOVRITTA MASALUN. Effect of Bacteriophage Concentration and Storage Time on *Enterobacteriaceae* Reduction in Chicken Meat. Supervised by HERWIN PISESTYANI and ETIH SUDARNIKA.

Chicken meat is highly susceptible to microbial contamination, particularly by *Enterobacteriaceae*, including *Escherichia coli* and *Salmonella* spp., which can compromise food safety. This study evaluated the effectiveness of bacteriophage application at different concentrations and storage times in reducing *Enterobacteriaceae* counts in chicken meat. 75 drumstick samples inoculated with *Salmonella* Typhimurium were assigned to 5 groups: a positive control group (without bacteriophage treatment) and 4 bacteriophage treatment groups with bacteriophage-to-water ratios of 1:1 (spray), 1:10 (dip), 1:100 (dip), and 1:1000 (dip). The samples were stored under refrigerated conditions and analyzed at 0, 24, and 48 hours. *Enterobacteriaceae* counts were determined using the total plate count method on Violet Red Bile Glucose Agar. The data were analyzed using the Kruskal-Wallis test; the bacteriophage treatments showed variable reduction in *Enterobacteriaceae* counts during refrigerated storage. The 1:10 dipping treatment showed the most consistent reduction pattern, particularly after 24 and 48 hours of storage. These results indicate that bacteriophage application may be a promising biological control strategy to improve the microbiological safety of chicken meat.

Keywords: Bacteriophage, biological control, chicken meat, *Enterobacteriaceae*, storage time

ABSTRAK

LEOVRITTA MASALUN. Pengaruh Konsentrasi Bakteriofag dan Waktu Penyimpanan terhadap Penurunan Jumlah *Enterobacteriaceae* pada Daging Ayam. Dibimbing oleh HERWIN PISESTYANI dan ETIH SUDARNIKA.

Daging ayam mudah terkontaminasi oleh mikroorganisme, terutama *Enterobacteriaceae*, termasuk *Escherichia coli* dan *Salmonella* spp., yang dapat membahayakan keamanan pangan. Penelitian ini bertujuan mengevaluasi efektivitas bakteriofag pada berbagai konsentrasi dan waktu penyimpanan dalam menurunkan jumlah *Enterobacteriaceae* pada daging ayam. Sebanyak 75 sampel paha ayam diinokulasi dengan *Salmonella* Typhimurium dan dibagi ke dalam 5 kelompok, yaitu 1 kelompok kontrol positif (tanpa perlakuan bakteriofag) dan 4 kelompok perlakuan bakteriofag, yaitu rasio bakteriofag terhadap air sebesar 1:1 (semprot), 1:10 (celup), 1:100 (celup), dan 1:1000 (celup). Sampel disimpan dalam kondisi dingin dan dianalisis pada 0, 24, dan 48 jam. Jumlah *Enterobacteriaceae* dihitung dengan metode hitung cawan menggunakan media *Violet Red Bile Glucose Agar*. Data dianalisis menggunakan uji *Kruskal-Wallis*: perlakuan bakteriofag menunjukkan penurunan jumlah *Enterobacteriaceae* yang bervariasi selama penyimpanan di lemari es. Perlakuan 1:10 dengan metode celup menunjukkan pola penurunan yang paling konsisten, khususnya setelah 24 dan 48 jam penyimpanan. Hasil ini menunjukkan bahwa aplikasi bakteriofag berpotensi menjadi strategi

pengendalian biologis yang menjanjikan untuk meningkatkan keamanan mikrobiologis pada daging ayam.

Kata kunci: Bakteriofag, daging ayam, *Enterobacteriaceae*, keamanan pangan, pengendalian biologis, waktu penyimpanan

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EFFECT OF BACTERIOPHAGE CONCENTRATION AND STORAGE TIME ON *ENTEROBACTERIACEAE* REDUCTION IN CHICKEN MEAT

LEOVRITTA MASALUN

Undergraduate thesis
As one of the requirements to obtain a degree of
Bachelor of Veterinary Medicine
in the School of Veterinary Medicine and Biomedical Sciences

**STUDY PROGRAM OF VETERINARY SCIENCES
SCHOOL OF VETERINARY MEDICINE AND
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Examining Team for Thesis Examination:

1. Dr. drh. Nurhidayat, M.S., Ph.D.
2. Dr. drh. Novericko Ginger Budiono, M.Si.

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Scriptum Title: Effect of Bacteriophage Concentration and Storage Time on
Enterobacteriaceae Reduction in Chicken Meat

Name : Leovritta Masalun

NIM : B0401221811

Approved by

Supervisor 1:

Dr. drh. Herwin Pisestyani, M.Si.



Supervisor 2:

Dr. Ir. Etih Sudarnika, M.Si.



Acknowledge by

Head of Veterinary Sciences Study Program

Dr. drh. Wahono Esthi Prasetyaningtyas, M.Si.

NIP. 198006182006042026



Vice Dean of Academic, Student Affairs, and Alumni
School of Veterinary Medicine and Biomedical Sciences

Prof. drh. Ni Wayan Kurniani Karja, M.P., Ph.D.

NIP. 196902071996012001



Date of Examination:
08 July 2026

Date of Approval: 14 JUL 2026

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ACKNOWLEDGEMENT

Praise and gratitude are extended to God Almighty for all His blessings, which have enabled this thesis to be completed. The title chosen for the thesis conducted in December 2025 to March 2026 was “Effect of Bacteriophage Concentration and Storage Time on *Enterobacteriaceae* Reduction in Chicken Meat.”

The author would like to express sincere gratitude to the Supervisors, Dr. drh. Herwin Pisestyani, M.Si., as Supervisor I, and Dr. Ir. Etih Sudarnika, M.Si., as Supervisor II and also as Academic Supervisor, for their patience, guidance, motherly figures, and valuable suggestions throughout this thesis. Appreciation is also extended to the seminar moderator and the external examiners of the advisory committee. In addition, the Author expresses gratitude to Mr. Hendra and Mr. Muadin, Educational Staff of the Division of Veterinary Public Health and Epidemiology, who assisted with the thesis. Special thanks are given to the author’s beloved parents and siblings for their continuous support, prayers, and encouragement.

The author would also like to thank the thesis partner, Dinishaa, for her cooperation and support. Finally, sincere appreciation is extended to Justin Viriyawan Kusuma for his presence, motivation, and encouragement throughout the thesis writing process.

The author acknowledges that this thesis still has limitations. Therefore, the author welcomes constructive criticism and appreciates suggestions for future improvement. May this scientific work be beneficial and contribute to the advancement of knowledge.

Bogor, July 2026

Leovritta Masalun



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