

EFFECT OF TOTAL PLATE COUNT AND ENTEROBACTERIACEAE AND *Staphylococcus aureus* COUNTS ON MILK COMPOSITION IN WEST JAVA

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ABSTRACT

HARSHA ADHIKARA GUNAWAN. EFFECT OF TOTAL PLATE COUNT AND ENTEROBACTERIACEAE AND *Staphylococcus aureus* COUNTS ON MILK COMPOSITION IN WEST JAVA. Supervised by DENNY WIDAYA LUKMAN and IIS ARIFANTINI.

Milk quality is influenced by microbiological contamination and milk composition, both of which are closely related to udder health and milking hygiene. This study aimed to analyze the relationships between total plate count (TPC), Enterobacteriaceae, and *Staphylococcus aureus* counts and milk composition in dairy farms in West Java. A total of 345 quarter milk samples were analyzed using standard plate count methods, while milk composition was measured using a milk analyzer. Data were analyzed using Spearman correlation and Kruskal–Wallis tests. The results showed that TPC ($183,744.25 \pm 739,331.90$ CFU/ml) and Enterobacteriaceae counts ($248.34 \pm 1,479.89$ CFU/ml) were generally within acceptable limits, with compliance rates of 95.36% and 97.68%, respectively. In contrast, *S. aureus* count ($26,348.96 \pm 57,621.02$ CFU/ml) showed very low compliance (2.03%). No significant differences in milk composition were observed between SNI-compliant and non-compliant groups for TPC or Enterobacteriaceae ($p > 0.05$). *S. aureus* SNI-compliant samples had significantly higher fat and total solids contents than non-compliant samples ($p < 0.05$). No significant correlations were found between microbiological parameters and milk composition variables ($p > 0.05$), suggesting that milk composition may be influenced more strongly by nutrition, health, and management factors than by microbiological contamination alone. In conclusion, microbiological contamination showed limited associations with milk composition

Keywords: Enterobacteriaceae count, milk composition, total plate count, *Staphylococcus aureus* count

ABSTRAK

HARSHA ADHIKARA GUNAWAN. PENGARUH ANGKA LEMPENG TOTAL DAN ANGKA ENTEROBACTERIACEAE DAN *Staphylococcus aureus* TERHADAP KOMPOSISI SUSU DI JAWA BARAT. Dibimbing oleh DENNY WIDAYA LUKMAN dan IIS ARIFANTINI.

Kualitas susu dipengaruhi oleh kontaminasi mikroorganisme dan komposisi susu yang keduanya berkaitan erat dengan kesehatan ambing serta higiene pemerahan. Penelitian ini bertujuan untuk menganalisis hubungan antara angka lempeng total (ALT), jumlah Enterobacteriaceae, dan jumlah *Staphylococcus aureus* dengan komposisi susu pada peternakan sapi perah di Jawa Barat. Sampel susu sebanyak 345 kuartal dianalisis menggunakan metode hitung cawan, sedangkan komposisi susu diukur menggunakan *milk analyzer*. Data dianalisis menggunakan uji korelasi Spearman dan uji Kruskal–Wallis. Hasil penelitian menunjukkan bahwa ALT ($183.744,25 \pm 739.331,90$ CFU/ml) dan jumlah Enterobacteriaceae ($248,34 \pm 1.479,89$ CFU/ml) umumnya masih berada dalam

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batas yang dapat diterima, dengan tingkat kesesuaian terhadap SNI masing-masing sebesar 95,36% dan 97,68%. Jumlah *S. aureus* ($26.348,96 \pm 57.621,02$ CFU/ml) sebaliknya, menunjukkan tingkat kesesuaian yang sangat rendah (2,03%). Sampel yang memenuhi standar SNI untuk *S. aureus* memiliki kadar lemak dan total padatan yang secara signifikan lebih tinggi dibandingkan dengan sampel yang tidak memenuhi standar ($p < 0,05$). Tidak ditemukan korelasi yang signifikan antara parameter mikrobiologis dan variabel komposisi susu ($p > 0,05$), sehingga variasi komposisi susu kemungkinan lebih dipengaruhi oleh faktor nutrisi, kesehatan, dan manajemen pemeliharaan dibandingkan oleh kontaminasi mikrobiologis. Penelitian ini secara keseluruhan menyimpulkan bahwa kontaminasi mikroorganisme menunjukkan hubungan yang terbatas dengan komposisi susu.

Kata kunci: Angka lempeng total, jumlah Enterobacteriaceae, jumlah *Staphylococcus aureus*, komposisi susu

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PREFACE

The author expresses praise and gratitude to God Almighty for all His blessings, enabling the completion of this research. The theme chosen for this research is the “Effect Of Total Plate Count and Enterobacteriaceae and *Staphylococcus aureus* Counts On Milk Composition In West Java”.

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May this work be beneficial to those in need and contribute to the advancement of scientific knowledge.

Bogor, July 2026

Harsha Adhikara Gunawan



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