

**KAJIAN ANGKA LEMPENG TOTAL (ALT) BAKTERI, DETEKSI
Salmonella spp. DAN *Escherichia coli*, SERTA SENSITIVITAS
TERHADAP ANTIBIOTIK PADA SUSU SEGAR
DAN SUSU OLAHAN**

Oleh :

Yoseph Vishnu Pramuditya
13/355375/PKH/0493

Intisari

Susu sebagai sumber protein hewani sangat rentan akan cemaran bakteri. Cemaran disebabkan proses distribusi susu yang panjang dan metode pengolahan yang berbeda-beda pada setiap tingkat distribusi. Konsumsi susu yang tercemar dapat menyebabkan gangguan pencernaan hingga kematian, terutama bila terjadi cemaran oleh *Salmonella* spp. dan *Escherichia coli* patogen. Kejadian ini diperparah dengan adanya resistensi bakteri sehingga pengobatan menjadi semakin sulit. Kejadian tersebut menjadi dasar pentingnya penelitian yang bertujuan untuk mengetahui angka lempeng total (ALT) bakteri, mengetahui keberadaan bakteri *Escherichia coli* dan *Salmonella* spp. pada beberapa tingkat distribusi serta sifat resisten antibiotik. Penelitian menggunakan 133 sampel susu yang terdiri dari 35 sampel susu segar, 33 sampel susu pasteurisasi, 35 sampel susu *ultra high temperature* (UHT), dan 30 sampel susu yang dijual di kaki lima di Kabupaten Sleman. Susu dilakukan pemeriksaan terhadap angka lempeng total (ALT), isolasi dan identifikasi *Salmonella* spp. dan *Escherichia coli*. Metode isolasi dan identifikasi menggunakan metode konvensional dan *rapid test* API 20E. *Escherichia coli* yang berhasil diidentifikasi diuji patogenesitasnya dengan melihat sifat hemolisa dan kemampuan mengikat pewarna *Congo Red*. Bakteri yang berhasil diidentifikasi selanjutnya diuji sensitivitasnya terhadap 12 macam antibiotik: ampicilin, eritromisin, tetrasiklin, oksitetrasiklin, penisilin, kloramfenikol, kanamisin, amoksisilin, enrofloksasin, gentamisin, amikasin, dan trimetoprim. Hasil angka cemaran total, isolasi dan identifikasi *Salmonella* spp. dan *Escherichia coli* serta uji sensitivitas antibiotik dianalisis secara deskriptif. Hasil uji angka lempeng total (ALT) bakteri yang melebihi batas SNI 73,33% pada susu kaki lima, 48,48% pada susu pasteurisasi, 37,15% pada susu segar, dan 37,15% pada susu UHT. Hasil isolasi identifikasi *Escherichia coli* didapatkan 9 (6,7%) isolat dan *Salmonella paratyphi* A 1 (0,75%) isolat. Uji faktor virulensi *Escherichia coli* didapatkan 2 (22%) isolat α -hemolisa, 1 (11%) isolat β -hemolisa, 6 (67%) isolat γ -hemolisa, dan tidak ada isolat yang mampu mengikat pewarna *Congo Red*. Hasil uji sensitivitas antibiotik terhadap *Salmonella paratyphi* A menunjukkan bahwa bakteri tersebut masih sensitif terhadap semua antibiotik, sedangkan pada *Escherichia coli* sensitif terhadap 10 macam antibiotik selain eritromisin dan penisilin.

Kata kunci: Susu, Angka Lempeng Total, *Salmonella* spp., *Escherichia coli*, sensitivitas antibiotik

**STUDIES ON TOTAL PLATE COUNT, DETECTION OF *Salmonella* spp.
AND *Escherichia coli*, AND ANTIBIOTIC SENSITIVITY IN
FRESH MILK AND PROCESSED MILK**

**Yoseph Vishnu Pramuditya
13/355375/PKH/0493**

Abstract

Milk as protein source has high risk of bacteria contamination. Contamination is caused by a longer milk distribution and a different method of milk processing in every level of milk distribution. Consumption of contaminated milk affecting in digestive disorders can result in death especially if contamination is caused by *Salmonella* spp. and pathogen *Escherichia coli*. The contamination is severed by the existence of antibiotic resistant bacteria. It is important to conduct research which aimed to explore bacteria total plate count (TPC), to detect *Escherichia coli* and *Salmonella* spp. at several milk distribution level and antibiotic resistency. This research used total of 133 fresh and processed milk, which consist of 35 samples of fresh milk, 33 samples of pasteurized milk, 35 samples of ultra high temperature (UHT) milk, and 30 samples of street stall milk. Milk were examined for the total plate count, detection of *Salmonella* spp. and *Escherichia coli*. Isolation and identification method used in this research were the conventional method and rapid test API 20E. *Escherichia coli* isolates were then examined for the blood hemolyse abilities and the ability to bind the Congo Red stain. Bacteria acquired then were tested for antibiotic sensitivity test using 12 kinds of antibiotic: ampicillin, tetracycline, oxytetracycline, penicillin, chloramphenicol, kanamycin, amoxycillin, enrofloxacin, gentamycin, amikacin, and thrimetophrim. All of the test results then were analyzed descriptively. Results of total plate count test showed that several milk had crossed over the maximum standart of bacterial contamination, 73,33% in 'street stall' milk, 48,48% in pasteurized milk, 37,15% in fresh milk, and 37,15% in ultra high temperature milk. Result of isolation and identification were found 1 isolate of *Salmonella paratyphi* A (0,75%) and 9 (6,7%) isolates of *Escherichia coli*. Tests of virulence factor of *Escherichia coli* were found 2 (22%) α -hemolisa, 1 (11%) β -hemolisa, and 6 (67%) γ -hemolisa, but no strain was able to bind the congo red stain. Antibiotic sensitivity test results showed *Salmonella paratyphi* A still sensitive to all kinds of antibiotic, while *Escherichia coli* was sensitive against 10 antibiotic but resistant to erythromycin dan penicillin.

Key Words: Milk, Total Plate Count, *Salmonella* spp., *Escherichia coli*, antibiotic sensitivity