

ABSTRAK

EVALUASI RISIKO KEAMANAN KONSUMSI SUSU KAMBING SEGAR BERDASARKAN TINGKAT CEMARAN BAKTERI DAN DETEKSI *Escherichia coli* O157:H7 PADA PETERNAKAN DI SLEMAN

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Susu kambing Sapera memiliki nilai gizi tinggi, namun rentan terhadap kontaminasi bakteri seperti *Escherichia coli* yang mengindikasikan higiene yang buruk, termasuk strain patogen *E. coli* O157:H7 penyebab penyakit serius pada manusia. Penelitian di Sleman masih menunjukkan hasil yang kontradiktif mengenai keberadaan patogen ini. Penelitian ini bertujuan untuk mengevaluasi risiko keamanan susu kambing segar berdasarkan tingkat cemaran *E. coli* dan deteksi *E. coli* O157:H7 pada peternakan di Sleman. Penelitian dilakukan secara observasional laboratorik dengan pendekatan *cross-sectional* menggunakan 120 sampel susu kambing Sapera dan 21 sampel lingkungan (swab kandang, swab tangan pekerja, dan air minum) dari tujuh peternakan di Sleman. Enumerasi *E. coli* dilakukan menggunakan MC-Media Pad®. Isolasi dan identifikasi *E. coli* O157:H7 dilakukan melalui pengayaan pada *Buffered Peptone Water* (BPW), penanaman pada media selektif *Sorbitol-MacConkey Agar* (SMAC), diikuti uji oksidase, uji IMViC, pengecatan Gram, konfirmasi dengan *Sensititre Gram-Negative Identification* (GN-ID), dan uji *Polymerase Chain Reaction* (PCR). Hasil enumerasi menunjukkan bahwa dari 120 sampel susu, hanya satu sampel (0,83%) dari Tolak Miskin Farm yang memiliki nilai cemaran *E. coli* sebesar 580 CFU/g, melampaui batas SNI 9159:2023 (100 CFU/g). Enam peternakan lainnya memiliki nilai cemaran di bawah batas deteksi (<10 CFU/g) atau antara 10-50 CFU/g. Hasil identifikasi *E. coli* O157:H7 menemukan dua isolat positif (1,67%) pada sampel susu dari Tolak Miskin Farm, sementara keenam peternakan lain serta seluruh sampel lingkungan menunjukkan hasil negatif. Berdasarkan temuan ini, Tolak Miskin Farm dikategorikan memiliki tingkat risiko tinggi, sedangkan enam peternakan lainnya berisiko rendah. Namun, deteksi *E. coli* pada empat peternakan mengindikasikan perlunya evaluasi higiene. Kesimpulannya, konsumsi susu kambing segar mentah dari Tolak Miskin Farm berisiko tinggi terhadap kesehatan. Disarankan untuk mempasteurisasi semua susu sebelum dikonsumsi, dengan prioritas perbaikan higiene menyeluruh pada Tolak Miskin Farm serta monitoring rutin pada peternakan lain untuk mencegah potensi kontaminasi patogen.

Kata kunci: enumerasi, *Escherichia coli*, *E. coli* O157:H7, keamanan pangan, susu kambing Sapera

ABSTRACT

EVALUATION OF SAFETY RISK OF FRESH GOAT MILK CONSUMPTION BASED ON BACTERIAL CONTAMINATION LEVEL AND DETECTION OF *Escherichia coli* O157:H7 ON FARMS IN SLEMAN

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Sapera goat milk has high nutritional value but is susceptible to bacterial contamination, such as *Escherichia coli*, which indicates poor hygiene, including the pathogenic strain *E. coli* O157:H7 that causes serious illness in humans. Research in Sleman has shown contradictory results regarding the presence of this pathogen. This study aimed to evaluate the safety risk of fresh goat milk based on *E. coli* contamination levels and the detection of *E. coli* O157:H7 on farms in Sleman. This observational laboratory study used a cross-sectional approach, employing 120 Sapera goat milk samples and 21 environmental samples (pen swabs, worker hand swabs, and drinking water) from seven farms in Sleman. *Escherichia coli* enumeration was performed using MC-Media Pad®. Isolation and identification of *E. coli* O157:H7 were carried out through enrichment in Buffered Peptone Water (BPW), plating on selective Sorbitol-MacConkey agar (SMAC), followed by oxidase test, IMViC test, Gram staining, confirmation using the Sensititre Gram-Negative Identification (GN-ID) system and Polymerase Chain Reaction (PCR) test. The enumeration results showed that out of 120 milk samples, only one sample (0.83%) from Tolak Miskin Farm had an *E. coli* contamination level of 580 CFU/g, exceeding the Indonesian National Standard (SNI) 9159:2023 limit (100 CFU/g). The other six farms had contamination levels below the detection limit (<10 CFU/g) or between 10-50 CFU/g. *E. coli* O157:H7 identification revealed two positive isolates (1.67%) in milk samples from Tolak Miskin Farm, while the other six farms and all environmental samples tested negative. Based on these findings, Tolak Miskin Farm was categorized as having a high-risk level, whereas the other six farms were classified as low risk. However, the detection of *E. coli* on four farms indicates the need for hygiene evaluation. In conclusion, consumption of raw fresh goat milk from Tolak Miskin Farm poses a high health risk. It is recommended that all milk be pasteurized before consumption, with priority given to comprehensive hygiene improvement at Tolak Miskin Farm and routine monitoring on other farms to prevent potential pathogen contamination.

Key words: enumeration, *Escherichia coli*, *E. coli* O157:H7, food safety, Sapera goat milk