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ANTIBIOTIC SENSITIVITY PROFILE OF HEMOLYSIN-  
PRODUCING Escherichia coli O157:H7 IN NATIVE  
CALVES FROM SELECTED FARMS  
IN CAVITE

THESIS

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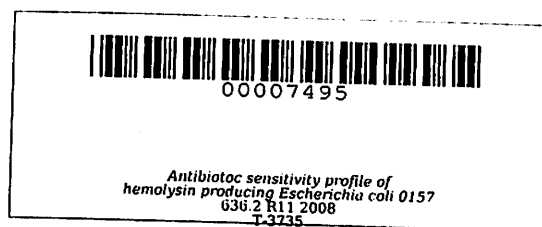
College of Veterinary Medicine and Biomedical Sciences  
CAVITE STATE UNIVERSITY  
Indang, Cavite

April 2008

**ANTIBIOTIC SENSITIVITY PROFILE OF HEMOLYSIN-PRODUCING  
*Escherichia coli* O157:H7 IN NATIVE CALVES  
FROM SELECTED FARMS IN CAVITE**

Undergraduate Thesis  
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**JOYCEDELL ILAGAN RACASA**  
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## ABSTRACT

RACASA JOYCEDELL I., Cavite State University, Indang, Cavite, April 2008. Antibiotic Sensitivity Profile of Hemolysin-Producing *Escherichia coli* O157:H7. Doctor of Veterinary Medicine, Cavite State University, Indang, Cavite. Adviser: Ma. Cynthia N. Rundina - dela Cruz, DVM, MS.

The study was conducted to determine the antibiotic profile of *Escherichia coli* O157:H7 in rectal fecal samples of native calves. Sixty five colonies were isolated from Sorbitol MacConkey Agar (Acumedia<sup>®</sup>) supplemented with cefixime and tellurite (Dynal<sup>®</sup>). In morphological characterization it showed that 47 isolates were gram negative, rod-shaped organisms out of 65 isolates. The isolates were characterized biochemically and were found to have the following *E. coli* reactions: Oxidase negative (-), Acid slant/ Acid butt with gas production on Triple Sugar Iron, absence of hydrogen sulfide production, indole positive and are motile or non- motile on Sulfide Indole Motility Medium, Methyl-red positive (+) and Voges-Proskauer test negative (-), citrate utilization negative (-), lysine decarboxylase positive (+), urease negative (-) and gelatinase negative.

Furthermore, the isolates were subjected to carbohydrate utilization test and 22 isolates oxidized and fermented dextrose (Difco<sup>®</sup>), while 20 isolates fermented and oxidized lactose (Pronadisa<sup>®</sup>) and maltose (Sigma<sup>®</sup>).

Only 1 isolate did not oxidize or ferment the sorbitol sugar and were considered as presumptive *Escherichia coli* O157:H7.

On serological characterization, only one presumptive *Escherichia coli* O157:H7 isolate were identified as *E. coli* O157:H7 and enterohemolysin was detected in this isolate using washed sheep red blood cells.

The isolate was found to be susceptible to fosfomycin, ciprofloxacin, norfloxacin, doxycycline, and trimethoprim-sulphamethoxazole, and were resistant to erythromycin. It has intermediate susceptibility to amoxicillin, colistin and lincomycin. The presence of hemolysin-producing *E. coli* O157:H7 in native calves suggests a need to improve backyard farm management and promote control measures to reduce *E. coli* O157:H7 fecal contamination and prevent the pathogen from entering the human food chain.

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**JOYCEDELL ILAGAN RACASA**

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<sup>1</sup>A thesis manuscript submitted to the faculty of the College of Veterinary Medicine and Biomedical Sciences, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for the degree of Doctor of Veterinary Medicine with Contribution No. CVMBS-2007-08-009. Prepared under the supervision of Dr. Ma. Cynthia N. Rundina – dela Cruz.

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**INTRODUCTION**

*Escherichia coli* O157:H7 is an enterohemorrhagic *E. coli* strain that was first recognized as an important food-borne human pathogen in 1982 (Vali et al., 2004). An increasing number of disease outbreaks of hemorrhagic colitis and hemolytic-uremic syndrome in humans have been linked to the ingestion of beef and dairy products contaminated with *Escherichia coli* O157:H7 (Brown et al., 1996). There are previous studies on the presence of toxigenic *Escherichia coli* O157:H7 in different farms in our country, wherein the organism in dairy cattle was isolated (Rundina, 2004 and Nuestro, 2005). The principal reservoir of the microorganism has been recognized in infected cattle, especially in young animals (Giammanco et al., 2002).

The first bovine *E. coli* O157:H7 isolate was recovered from a calf with colibacillosis (Cray and Moon, 1995). Handling calves is a common source of human infection, as calves are colonized by *E. coli* O157:H7. In addition, direct contact with