



Faculty of Resource Science and Technology

Microbial Quality of Razor Clams (*Solen Spp.*) Sold By Vendors in the Kuching-Samarahan Division

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THE KUCHING-SAMARAHAN DIVISION**

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This project is submitted in partial fulfilment of the requirement for the degree of Bachelor of
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Declaration

I hereby declare that this thesis entitled “Microbial quality of razor clams (*solen* spp.) sold by vendors in the Kuching-Samarahan division” submitted to the Faculty of Resource Science and Technology is of my original work except for the citations and references and never been before or concurrently submitted for any other degree qualification or other institutions. This work was submitted to partially fulfill the requirement for the degree of Bachelor of Science with Honours in Resource Biotechnology at Universiti Malaysia Sarawak.

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List of Abbreviations

<i>E. coli</i>	<i>Escherichia coli</i>
<i>S. typhimurium</i>	<i>Salmonella typhimurium</i>
<i>V. cholerae</i>	<i>Vibrio cholerae</i>
EMB	Eosin methylene blue
TCBS	Thiosulfate citrate bile salts
XLD	Xylose lysine deoxycholate
L	Liter
g	grams
KIA	Kligler's iron agar
SCA	Simmon's citrate agar.
°C	degrees Celsius
CFU/mL	Colony forming units per milliliter
rpm	revolutions per minute
PCR	Polymerase chain reaction
dNTP	deoxynucleotide triphosphate

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Abstract

Seafood-borne diseases have been increasingly recognized as a threat to human health. This is due to pathogenic bacteria that are present in the tissues of these seafood. The accumulation of pathogenic bacteria such as *Escherichia coli* O157:H7, *Salmonella typhimurium* and *Vibrio cholera* O1 in seafood collected from natural sources and sold in retail may pose a serious threat to health if consumed. In this study, 18 razor clams (*Solen spp.*) samples were collected, all from vendors around the Kuching-Samarahan division. Bacteriological analysis, bacterial identification and biochemical tests were performed for all the isolates obtained from samples. Detection of virulence genes of *E. coli* O157:H7, *S. typhimurium*, and *V. cholerae* O1 were done through Polymerase Chain Reaction for isolates that showed positive results to biochemical tests. None of the isolates were detected positive for *Escherichia coli* O157:H7, *Salmonella typhimurium* and *Vibrio cholera* O1, indicating the absence of these three pathogenic organisms in samples of *Solen spp.* tested.

Keywords: *Escherichia coli* O157:H7, *Salmonella typhimurium*, *Vibrio cholera* O1, *Solen spp.*, virulence genes.

Abstrak

Penyakit yang dibawa makanan laut semakin banyak dilaporkan sebagai ancaman kepada kesihatan manusia. Ini adalah disebabkan oleh bakteria patogen yang terdapat di dalam tisu makanan laut ini. Pengumpulan bakteria patogen seperti *Escherichia coli* O157:H7, *Salmonella typhimurium* dan *Vibrio cholera* O1 dalam makanan laut yang dikutip daripada sumber semula jadi dan dijual merupakan ancaman kepada kesihatan jika dimakan. Dalam kajian ini, 18 sampel telah dikumpulkan, semua daripada penjual makanan laut komersial di sekitar Bahagian Kuching-Samarahan. Analisis bakteriologi dan ujian biokimia telah dijalankan untuk semua bakteria yang dapat diasing daripada sampel ambil. Tindakbalas berangkai polimerase telah dijalankan bagi mengesan gen yang bertanggungjawab untuk mengenal pasti *E. coli* O157: H7, *S. typhimurium*, dan *V. cholerae*. Tiada bakteria yang telah diasing dikesan positif untuk *Escherichia coli* O157: H7, *Salmonella typhimurium* dan *Vibrio cholera* O1, menunjukkan tiadanya kewujudan organisma patogenik ini pada sample-sample yang diuji.

Kata kunci: *Escherichia coli* O157:H7, *Salmonella typhimurium*, *Vibrio cholera* O1, *Solen spp.*, gen virulens.