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**TYPING OF *CAMPYLOBACTER* ISOLATES FROM HUMANS AND
ANIMALS IN NEW ZEALAND**

A thesis presented in partial fulfilment of the
requirements for the degree of
Master of Science in Microbiology

at

Massey University
Palmerston North

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1998

ABSTRACT

Campylobacteriosis is currently the most commonly notified communicable disease in New Zealand. The sources of *Campylobacter* infections are not known, although the consumption of incompletely cooked poultry, untreated water, unpasteurised milk and contact with animals are associated with an increased risk of infection.

The aim of this study was to establish a simple and reliable method for typing *Campylobacter* isolates in order to investigate the sources of *Campylobacter* infections in humans in New Zealand.

Campylobacter isolates from humans and animals were identified to the species and sub-species level with a series of biochemical tests. The isolates were then examined by three genotypic typing methods: restriction fragment length polymorphism (RFLP) analysis of chromosomal DNA, randomly amplified polymorphic DNA (RAPD) typing using the polymerase chain reaction and RFLP analysis of the flagellin genes.

The flagellin gene, *flaB*, was examined by PCR amplification followed by digestion with the restriction endonucleases *Pst*I and *Hind*III. This method was the most reproducible of the three and provided a high level of discrimination, a total of 26 *Pst*I/*Hind*III groups were found among 140 human *Campylobacter* isolates. Over 98% of *C. jejuni* and *C. coli* isolates could be typed using this method. The results of this study indicated that sheep, cows and calves may be important sources of *Campylobacter* infection in humans.

ACKNOWLEDGMENTS

I would like to sincerely thank my supervisor Associate Professor Mary Nulsen for her valuable guidance and help throughout the course of this project, and in the writing of this thesis. I would also like to thank the Department of Microbiology and Genetics for the use of the research facilities that have made this project possible.

I am grateful to Dr. George Ionas and Dr. Jan Schmid for their help with this project. I wish to thank Carolyn Young for all of her assistance and for answering many questions. I would also like to thank Nicole Von Maltzahn for her help with the dendogram analysis.

I wish to thank Stan Fenwick from the Faculty of Veterinary Pathology and Public Health for providing some of the animal isolates used in this study. I would also like to thank Carolyn Nicol from the Institute of Environmental Science and Research for the provision of the serotyped isolates. I would like to extend my appreciation to Catherine Norman and Barbara Asmundson for their help in the collection of the human isolates.

I would like to say a big “thank you” to all of my friends in the department for their support. In particular, I would like to thank Barbara, Sheralee and Michiko for their many trips to the “bank” (Options).

Finally, I would like to thank my parents for their continued support and encouragement.

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LIST OF ABBREVIATIONS

bp	Base pair(s)
BRL	Bethesda research laboratories
CNSM	Charcoal non-selective medium
CSM	Charcoal selective medium
CTAB	Hexadecyltrimethyl ammonium bromide
DNA	Deoxyribonucleic acid
DNase	Deoxyribonuclease
dNTP	Deoxynucleotide triphosphate
EDTA	Ethylene diamine tetra-acetate
kb	Kilobase
mins	Minutes
MEE	Multilocus enzyme electrophoresis
NCTC	National collection of type cultures
PBS	Phosphate buffered saline
PCR	Polymerase chain reaction
PFGE	Pulsed field gel electrophoresis
ppm	Parts per million
RAPD	Random amplification of polymorphic DNA
RFLP	Restriction fragment length polymorphism
rpm	Revolutions per minute
S_{AB}	Similarity value
SDS	Sodium dodecyl sulphate
TAE	Tris acetate EDTA
<i>Taq</i>	<i>Thermus aquaticus</i>
TE	Tris EDTA
TNE	Tris NaCl EDTA
Tris	Tris-(hydroxymethyl) aminomethane
U	Unit(s)
UV	Ultra Violet
V	Volts
w/	With
(w/v)	Weight: volume ratio
X	Times concentrated