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

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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 incompletly 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, *fla*B, was examined by PCR amplification followed by digestion with the restriction endonucleases *Pst*I and *Hin*dIII. This method was the most reproducible of the three and provided a high level of discrimination, a total of 26 *Pst*I/*Hin*dIII 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.

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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
Taq	*Thermus aquaticus*
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