

INCIDENCE OF *CAMPYLOBACTER SPP.* IN CAECAL CONTENTS OF BROILERS IN ANAND CITY, GUJARAT

R. S. Tayde and M. N. Brahmbhatt

Department of Veterinary Public Health

College of Veterinary Science and Animal Husbandry

Anand Agricultural University, Anand-388001, Gujarat, India

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ABSTRACT

A total of 60 intestinal samples (caecal content) from fresh slaughtered broiler carcass were collected from the retail meat market in and around Anand city. Forty six out of 60 (76.7 %) samples were found positive for the *Campylobacter spp.* The species wise high incidence rate of 82.66 % was noted for *C. jejuni*, whereas lower incidence rate of 10.86 % and 6.52 % was found for *C. coli* and other unidentified *Campylobacter spp.*, respectively. *C. jejuni* was more frequently isolated indicating that this species is distributed widely in the study area.

KEYWORDS : Incidence, *Campylobacter spp.*, Broilers, Intestinal content,

INTRODUCTION

Campylobacter spp. has been recognized as one of the most frequent causes of gastrointestinal illness in humans throughout the world. In recent years, the frequency of human enteritis caused by *Campylobacter spp.* has exceeded those caused by *Salmonella* especially in developed countries (WHO, 2002). *Campylobacteriosis* is mainly a foodborne infection (Hopkins and Scott, 1983) and handling and consumption of poultry products (Evans and Wegener, 2003; Wingstrand et al., 2006) may play an important role in transmission to humans. Therefore, the present study was undertaken with the objective to know the incidence of *Campylobacter spp.* from intestinal content of poultry which serves as a source of contamination to meat intended for the human consumption available in the retail meat market.

MATERIALS AND METHODS

A total of 60 poultry intestine /caecal content from retail poultry meat shops in the market in and around Anand city, Gujarat State, were collected aseptically. Caecal samples were collected in sterilized polypropylene bags and transported to the laboratory in an icebox for microbiological analysis.

The culture media and supplements used in this study were procured from HiMedia Pvt. Ltd., Mumbai, India. the oligonucleotide primer pair was obtained from osmium biosolution. Baroda, Gujarat. 2X PCR Master Mix was purchased from Fermentas Inc. Samples were processed to isolate the *Campylobacter spp.* as per the method described by FDA BAM (FDA BAM, 1998).

Direct plating on selective medium protocol as per ISO (1995) was used with little modification for isolation of *Campylobacter spp.* from intestinal content. The intestine or caeca was cut open with sterilized scissor and forceps to remove excess of coarse intestinal content. The loopful of content was taken and plated on selective medium, i.e. Park and Sanders medium. The plates were incubated at 42°C for 24-48 h in microaerophilic condition (85% N₂, 10 % CO₂ and 5% O₂) in CO₂ incubator (Autoflow, USA).

Identification of Isolates

The presumptive *Campylobacter* colonies showing typical greyish white translucent dew drop like colonies were picked up and subcultured on the nonselective blood agar for further biochemical characterization. Biochemical test used for identification of *Campylobacter spp.* are given in Table.1

RESULTS AND DISCUSSION

Out of total 60 samples of intestinal content processed 76.6 % were found positive for the pathogenic *Campylobacter spp.* Of the 46 positive samples, 38 (82.60 %) were of *C. jejuni*, 5 (10.86 %) of *C. coli* and 3 (6.52 %) of other unidentified *Campylobacter spp.* The incidence rate for *C. jejuni* was found predominantly higher (82.60 %), whereas that of *C. coli* was lower (10.86 %). *Campylobacter jejuni* was more frequently isolated from the analyzed samples, indicating that this species is distributed widely in the study area.

Table 1: Biochemical characteristics of *Campylobacter spp.*

Sr. no.	Species	Oxidase	Catalase	Urease production	H ₂ S (TSI) Production	Nitrate reduction	Hippurate hydrolysis	Inoxyl acetate hydrolysis	Aerotolerance test		Growth in		Sensitivity/ resistance	
									25 ° C	37 ° C aerobic	1% Glycine	3.5% NaCl	Ce* (30 ug)	NA* (30 ug)
1	<i>C. coli</i>	+	+	-	V	+	-	+	-	+	+	-	-	+
2	<i>C. hyointestinalis</i> subsp. <i>hyointestinalis</i>	+	+	-	+	+	-	-	V	+	+	-	+	-
3	<i>C. hyointestinalis</i> subsp. <i>lawsonii</i>	+	+	-	+	+	-	-	-	+	V	-	+	-
4	<i>C. jejuni</i> subsp. <i>doylei</i>	+	V	-	-	-	+	+	-	+	V	-	-	+
5	<i>C. jejuni</i> subsp. <i>jejuni</i>	+	+	-	-	+	+	+	-	+	+	-	-	+
6	<i>C. lari</i>	+	+	V	-	+	-	-	-	+	+	-	-	-
7	<i>C. upsaliensis</i>	+	-	-	-	+	-	+	-	+	+	-	+	+

+ = Positive, - = Negative, V = Variable; * Ce = Cephalothin, *NA = Nalidixic Acid.

The overall prevalence of *Campylobacter spp.* in present study was higher than the findings of Nielsen et al. (1997) and Madden et al. (1998), who reported 36 % and 38 % prevalence rate of *Campylobacter spp.*, respectively, in poultry. Similarly, Shanker et al. (1982) and Aradwad (2005) observed incidence rate of 45 % and 78.33 %, respectively, for *C. jejuni* for the chicken.

Although there is significant variation in prevalence of *Campylobacter spp.* in different species of animals as reported by different workers, the organism was found to be predominant in poultry. *Campylobacter* is normal inhabitant of intestinal tract of most of the animals which during faulty handling, faulty processing and improper storage are responsible for transmission to the food of animal origin.

Campylobacter is considered normal inhabitant of intestinal tract of food animals including poultry. Faulty handling, lack of sanitation at processing and improper storage has been considered as the major source contaminating all types of animal foods and represents a potential risk for consumers. So, attention should be paid towards the adequate sanitary measure and proper handling of carcass to avoid possible cross-contamination during processing at the retail establishment.

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