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Isolation, characterization and antimicrobial sensitivity pattern of *Campylobacter* species from diarrhoeic piglets

S RAJKHOWA[1], S R PEGU[2], MRINALEE DEVI[3] and A DAS[4]

National Research Centre on Pig, Rani, Asom 781 131 India

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*Campylobacte*r spp. are also associated with diarrhoea in piglets (Adesivum *et al*. 1992). As recent data relating to campylobacteriosis in animals particularly more in pigs is sparse in the country, the study was planned to isolate, characterize and obtain antimicrobial sensitivity pattern of *Campylobacter* spp. from diarrhoeic piglets.

Fresh faecal samples (60) from piglets with diarrhoea were collected from the pig farm of the National Research Centre on Pig (ICAR), Rani, Guwahati, Asom during the period of June 2009 to May 2010. One gram of each of the sample was suspended in 9 ml of buffered peptone water and one loopful of the faecal suspension was directly inoculated in triplicate in to Butzler's selective medium containing Brucella agar base, defibrinated sheep blood 7%, Campylobacter growth supplement and Butzler antibiotic supplement. Then the plates were incubated at 37ºC for 48 h in an anaerobic jar to provide microaerophilic conditions without any catalyst. Confirmation of the isolates was done as per Collee *et al.* (1989). The isolates were identified to species level as per Atabay and Corry (1997).

The isolates were biotyped on the basis of hippurtate hydrolysis test, rapid H_2S test and deoxyribonuclease enzyme production (DNase) test as per Lior (1984). *In-vitro* antibiogram of all the isolates of *Campylobacter* were tested by the disc diffusion technique according to Bauer *et al.* (1966) using 18 different antimicrobial discs (Hi-Media).

Out of the 60 diarrhoeic samples which were collected from piglets, 38 (63.33%) were positive for *Campylobacter* spp.The present finding is almost similar with the findings of Adesivum *et al*. (1992) who also isolated *Campylobacter* spp.from diarrhoeic piglets. All the isolates were positive for oxidase, catalase, H_2S production and nitrate reduction tests and were able to grow at 37ºC and on Mac Conkeys agar and medium containing 1% glycine (Table 1). It was also observed that the medium containing 1.5% NaCl inhibited the growth of the organisms. All the isolates showed negative reaction to glucose fermentation test. The similar characteristics of *Campylobacte*r spp. as observed in the present study was also reported by Varma *et al.* (2005). *Campylobacter coli* was the most commonly isolated species accounting for 26 (68.42%) of the isolates in this study. Other *Campylobacter* spp. isolated in this study was *C. jejuni* (31.57%). The present study corroborates with the findings of Adesivum *et al.* (1992) and Chattopadhyay *et al.* (2001) who also isolated *C. coli* and *C. jejuni* from diarrhoeic piglets in which the most frequently isolated species was *C. coli*. The biotyping of the *Campylobacter* spp. revealed that *C. coli* biotype I (out of biotype I and II) was the most common biotype (61.53%) of *C. coli* in this study, while *C. jejuni* biotype I (out of biotype I and II) was also common (58.33%).

Table 1. Characteristics of *Campylobacter* species isolated from diarrhoeic piglets

Tests	Positive isolates	
	No.	%
Nitrate reduction	38	100.00
H_2S (lead acetate)	38	100.00
Catalase	38	100.00
Oxidase	38	100.00
Glucose	0	0.00
Resistance to nalidixic acid	8 (resistant)	21.05
Growth at 37ºC	38	100.00
Growth in Mac Conkeys agar	38	100.00
Growth in 1% glycine	38	100.00
Growth in 1.5% NaCl	0	0.00

Antibacterial sensitivity pattern of *Campylobacter* isolates is given in Table 2. The study revealed that the *Campylobacter* isolates were 100% sensitive to amikacin followed by gentamicin, nalidixic acid, chloramphenicol and streptomycin. This finding is in accordance with those of Karina and Andrey (2007). We also observed that all the isolates of *Campylobacter* were resistant to penicillin G and

Present address: [1]Senior Scientist (e mail: swaraj.rajkhowa @gmail.com), [2]Scientist, [3]Project Assistant, [4]Director.

Table 2. Antibacterial susceptibility pattern of *Campylobacter* species isolated from diarrhoeic piglets

Antibacterials	No. of strains sensitive	% sensitivity
Amikacin	38	100.00
Amoxycillin	15	39.47
Ceftriaxone	19	50.00
Cephalexin	19	50.00
Cephalothin	0	0.00
Chloramphenicol	29	76.31
Chlortetracycline	25	65.78
Ciprofloxacin	19	50.00
Enrofloxacin	19	50.00
Gentamicin	37	97.36
Kanamycin	19	50.00
Lincomycin	0	0.00
Nalidixic acid	30	78.94
Penicillin G	0	0.00
Streptomycin	29	76.31
Sulphadiazine	1	2.63
Tetracycline	8	21.05
Trimethoprim	0	0.00

this finding was in agreement with the findings of Karina and Andrey (2007). Majority of the isolates (78.94%) in the present study showed resistance to tetracycline and this finding corroborated with the findings of Gebreyes *et al.* (2005) who also observed highest frequency of resistance of *Campylobacter* species from pigs to tetracycline.

SUMMARY

Faecal samples (60) from diarrhoeic piglets were analyzed for the presence of *Campylobacter* spp. by standard culture techniques. Out of these samples, 38 (63.33%) were positive for *Campylobacter* spp. The species identified were *Campylobacter coli* (68.42%) and *C. jejuni* (31.57%). Biotyping of the *Campylobacter* spp. revealed that *C. coli* biotype I (61.53%) was the most common biotype of *C. coli* in the study, while *C. jejuni* biotype I (58.33%) was also common. *Campylobacter* isolates were 100% sensitive to amikacin followed by gentamicin (97.36%), nalidixic acid (78.94%), chloramphenicol (76.31%) and streptomycin (76.31%). All the isolates of *Campylobacter* were resistant to cephalothrin, lincomycin, penicillin G and trimethoprim.

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