

# COMPARISON OF ANTIBIOTIC SUSCEPTIBILITY PATTERNS OF ENTERIC PATHOGENS BETWEEN ISOLATES FROM THAILAND, NEPAL AND VIETNAM FROM 1995 THROUGH 2000

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Antibiotic resistance among enteric pathogens is of a critical concern and influences the effectiveness of treatment for patients suffering from traveler's diarrhea (TD). The Armed Forces Research Institute of Medical Sciences (AFRIMS), Department of Enteric Diseases, routinely tests enteric pathogen isolates from patients for antibiotics susceptibility (AS) patterns during the course of conducting research on TD in South East Asia. We reviewed our databases for the years 1995 to 2000 to compare the AS patterns of isolates obtained from studies conducted in Thailand, Nepal, and Vietnam. Isolates from Thailand and Vietnam were from local populations while isolates from Nepal were obtained from a travel medicine clinic that treats mainly ex-patriots living in Kathmandu and trekkers. We compared the differences of resistance in bacterial isolates to ampicillin (AMP), tetracycline (TCN), trimethoprim-sulphamethoxazole (SXT), ciprofloxacin (CIP), and azithromycin (AZM) (See Table 1).

Table 1: Percentage of antibiotic resistance among enteric pathogens isolated from studies conducted in Thailand, Nepal, and Vietnam (VN).

Antibiotic	Isolate Source	Bacterial Pathogen [% Resistance (n=)]					
		<i>Campylobacter</i>	<i>E.coli</i> (non-ETEC)	ETEC	<i>Salmonella</i> non-typhi	<i>Shigella</i>	<i>Vibrio</i>
AMP	Thai	24% (n=25)	47 (898)	<b>58 (340)</b>	27 (996)	<b>39 (379)</b>	<b>5 (632)</b>
	Nepal	n=0	n=0	<b>38 (182)</b>	0 (6)	<b>13 (24)</b>	<b>11 (27)</b>
	VN	n=0	71 (7)	<b>72 (173)</b>	16 (38)	<b>77 (344)</b>	<b>0 (4)</b>
TCN	Thai	41 (27)	54 (897)	<b>42 (340)</b>	<b>54 (995)</b>	<b>91 (379)</b>	<b>3 (632)</b>
	Nepal	n=0	n=0	<b>25 (182)</b>	<b>0 (6)</b>	<b>75 (24)</b>	<b>7 (27)</b>
	VN	n=0	57 (7)	<b>67 (173)</b>	<b>24 (38)</b>	<b>81 (344)</b>	<b>0 (4)</b>
SXT	Thai	15 (26)	49 (898)	<b>49 (340)</b>	37 (996)	<b>92 (379)</b>	<b>44 (632)</b>
	Nepal	n=0	n=0	<b>42 (182)</b>	0 (6)	<b>71 (24)</b>	<b>100 (27)</b>
	VN	n=0	71 (7)	<b>68 (173)</b>	24 (38)	<b>79 (344)</b>	<b>0 (4)</b>
CIP	Thai	<b>78 (876)</b>	1 (898)	1 (339)	0 (996)	0 (379)	0 (632)
	Nepal	<b>n=0</b>	n=0	0 (182)	0 (6)	0 (24)	0 (27)
	VN	<b>7 (87)</b>	0 (7)	1 (173)	0 (38)	0 (344)	0 (4)
AZM	Thai	6 (839)	17 (101)	<b>14 (58)</b>	2 (190)	<b>0 (76)</b>	1 (172)
	Nepal	n=0	n=0	<b>0 (10)</b>	n=0	<b>0 (5)</b>	n=0
	VN	0 (64)	0 (5)	<b>7 (54)</b>	0 (19)	<b>8 (237)</b>	0 (4)

**Bolded numbers denote a statistical difference of  $p < 0.05$  between the isolate sources.**

Widespread resistance is noted for all ETEC and *Shigella* isolates to AMP, TCN, and SXT as well as for *E. coli* and *Salmonella* non-typhi isolates from Thailand and Vietnam, and *Campylobacter* isolates from Thailand. *Campylobacter* isolates from Thailand also had a high percentage of resistance to CIP. With the exception of SXT, *Vibrio* appears to continue to be susceptible to these antibiotics. AZM, overall, has the smallest percentage of resistance of these antibiotics.

Differences in the AS patterns between these three groups are especially noted for ETEC where Vietnam has a higher percentage of resistant isolates to AMP, TCN, and SXT, and for *Vibrio* from Nepal to the same antibiotics. Overall, Nepal has a lower percentage of resistant isolates. The variability of these data underscores the need for better reporting of results from research studies and surveillance systems throughout Asia. This will be increasingly important for tracking changes in AS patterns and making recommendations for the clinical treatment of TD in a region known for antibiotic resistance.