

# THE RESISTANCE OF THE GRAM-NEGATIVE RODS ISOLATED FROM CLINICAL CASES IN VIETNAM TO DORIPENEM

P.H. Van<sup>1,2,5\*</sup>, P.T. Binh<sup>2,3</sup>, L.L.B. Ngan<sup>2</sup>, P.T. Huong<sup>4</sup>

**Key words:** Doripenem, susceptibility testing

## BACKGROUND

In Vietnam, there have been many studies on the resistance of clinical isolated Gram [-] rods to imipenem and meropenem. For doripenem, the COMPACT II was recently reported as a multinational study investigating the doripenem resistance of gram negative rods isolated from hospitals in many countries in Asia, including Vietnam. However, the resistant data received from COMPACT II related to Vietnam was based on the quite small amount of isolates, so it is difficult to accurately reflect the in vitro efficacy of doripenem on the clinical isolate.

## AIMS

Investigate the situation of the resistance to doripenem of the high number of gram negative rods collected from different hospital in Vietnam and these strains were isolated from inpatients with infections.

## MATERIALS – METHODS

The objects of the study are the facultative Gram-negative rods including *E. coli*, *K. pneumoniae*, *Proteus*, *Enterobacter*, *P. aeruginosa*, and *A. baumannii* isolated from different infections including septicemia (BSI), urinary tract infection (UTI), intra-abdominal infections (IAI) and lower respiratory tract infection (LRI). The strains were collected from different hospital in Hochiminh city and in Hanoi. The method of susceptibility testing was the determination of MIC using Etest (Biomerieux) and the procedure was followed the manufacturer. The *E. coli* ATCC 25922 and *P. aeruginosa* ATCC 27853 were used to quality control. The interpretation standard of CLSI 2016 was used to interpret the received results of MIC. Beside Etest, the synergistic effect of the combination doripenem+colistin and doripenem+tigecycline on the XDR *A. baumannii* was also investigated and the method for this testing was the chess-board procedure on the 96 micro-well plate.

Table 1: The origin and the resistance ratio of the studied strains as well as the MIC<sub>50</sub> and MIC<sub>90</sub> of doripenem to the tested strains

	Specimens								TOTAL			MIC <sub>50</sub>	MIC <sub>90</sub>
	BSI		IAI		LRI		UTI		No	R	%R		
	No	R	No	R	No	R	No	R					
<i>E. coli</i>	136	1	122	1	62	4	200	3	520	9	1.73	0.032	0.064
<i>K. pneumoniae</i>	102	15	40	1	135	19	53	9	330	44	13.33	0.047	6
<i>Enterobacter</i>	44	4	8	1	28	0	17	3	97	8	8.25	0.047	0.25
<i>Proteus</i>	3	2	2	0	29	7	24	0	58	9	15.52	0.064	6
<i>A. baumannii</i>	55	37	7	4	87	71	24	22	173	134	77.46	>32	>32
<i>P. aeruginosa</i>	20	11	16	4	78	36	31	12	145	63	43.45	1.5	>32
<b>Total</b>	<b>360</b>	<b>70</b>	<b>195</b>	<b>11</b>	<b>419</b>	<b>137</b>	<b>349</b>	<b>49</b>	<b>1323</b>	<b>267</b>			

**BSI:** Blood site infections; **IAI:** Intra-abdominal infections, **LRI:** Lower respiratory tract infections, **UTI:** Urinary-tract infections

## CONCLUSION

This study can be considered as the first study to investigate the resistance to doripenem of the high number of Gram negative rods isolated from in-patients with septicemia, intra-abdominal infection, urinary tract infection and lower respiratory tract infection in Vietnam. The received and analyzed results were the essential data and information for clinical to consider selecting the appropriate antibiotic for treatment of infections causing by the Gram-negative rods.

<sup>1</sup>Nguyen Tri Phuong Hospital, <sup>2</sup>Nam Khoa Co., <sup>3</sup>University of Medicine and Pharmacy in HCMC, <sup>4</sup>Pham Ngoc Thach University of Medicine, <sup>5</sup>Phan Chau Trinh University