



Article

Lipidomic Analysis of the Outer Membrane Vesicles from Paired Polymyxin-Susceptible and -Resistant *Klebsiella pneumoniae* Clinical Isolates

Raad Jasim¹, Mei-Ling Han², Yan Zhu², Xiaohan Hu³, Maytham H. Hussein³, Yu-Wei Lin², Qi (Tony) Zhou⁴, Charlie Yao Da Dong¹, Jian Li^{2,*} and Tony Velkov^{3,*}

¹ Drug Delivery, Disposition and Dynamics, Monash Institute of Pharmaceutical Sciences, Monash University, Parkville, 3052 Victoria, Australia; raad.jasim@monash.edu (R.J.); charlie.dong@monash.edu (C.Y.D.D.)

² Monash Biomedicine Discovery Institute, Immunity and Infection Program and Department of Microbiology, Monash University, 3800 VIC, Australia; meiling.han@monash.edu (M.H.); yan.zhu@monash.edu (Y.Z.); Jian.Li@monash.edu (J.L.)

³ Department of Pharmacology and Therapeutics, University of Melbourne, Parkville, 3010 Victoria, Australia; xiaohan2@student.unimelb.edu.au (X.H.); maytham.hussein@unimelb.edu.au (M.H.H.); tony.velkov@monash.edu (T.V.)

⁴ Department of Industrial and Physical Pharmacy, College of Pharmacy, Purdue University, 575 Stadium Mall Drive, West Lafayette, 47907 IN, USA; tonyzhou@purdue.edu

* Correspondence: colistin.polymyxin@gmail.com (J.L.); Tony.Velkov@unimelb.edu.au (T.V.)

Received: 29 July 2018; Accepted: 7 Aug 2018; Published: date

Supplementary Materials:

Table S1. Antibiotic susceptibility and resistance gene profiles for two *K. pneumoniae* clinical isolates.

Isolate name	Antibiotic susceptibility	<i>K. pneumoniae</i> FADDI-KP069		<i>K. pneumoniae</i> BM3
		Susceptibility	MIC Value	Susceptibility
	Ampicillin	R	≥ 32	ND
	Amoxicillin/Clavulanic Acid	R	≥ 32	ND
	Ticarcillin/Clavulanic Acid	R	≥ 128	ND
	Piperacillin/Tazobactam	R	≥ 128	ND
	Cefazolin	R	≥ 64	ND
	Cefoxitin	R	≥ 64	ND
	Ceftazidime	R	≥ 64	ND
	Ceftriaxone	R	≥ 64	ND
	Cefepime	R	8	ND
	Meropenem	R	≥ 16	ND
	Amikacin	R	≥ 64	I
	Gentamicin	R	≥ 16	R
	Tobramycin	R	≥ 16	ND
	Ciprofloxacin	R	≥ 4	R
	Norfloxacin	R	≥ 16	ND
	Nitrofurantoin	R	256	S
	Trimethoprim	R	≥ 16	ND
	Trimethoprim/Sulfamethoxazole	R	≥ 320	ND
	Tetracyclin	ND	ND	R
	Chloramphenicol	ND	ND	S
	Netilmicin	ND	ND	I
	Tigecycline	ND	ND	I
	Fosfomycin	ND	ND	S

	Aztreonam ESBL	ND +	ND ND	R ND
Resistance genes	Carbapenemase (metallic or KPC)	+ ND	ND ND	ND +
	NDM-1	ND ND	ND ND	+
	CTX-M	ND ND	ND ND	+
	CMY-2	ND ND	ND ND	- +
	SHV	ND ND	ND ND	+
	TEM	ND +	ND +	+
	AAC-6'-1B	+ +	+	+

R = Resistant; I = Intermediate; S = Susceptible.