28th ECCMID EUROPEAN CONGRESS OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES
Madrid, Spain
21 – 24 April 2018

P0102 Antimicrobial activity of omadacycline tested against clinical bacteria isolates collected from hospitals in China, including Hong Kong, and Taiwan: results from the SENTRY Antimicrobial Surveillance Program (2013-2016)

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Background: Omadacycline (formerly PTK 0796) is a semisynthetic derivative of minocycline and the first agent of the aminomethylcycline class. Omadacycline received fast-track status by the United States Food and Drug Administration and is in late-stage clinical development for the treatment of acute bacterial skin and skin structure infections (ABSSSI) and community-acquired pneumonia (CABP) as oral and intravenous once-daily formulations.

Materials/methods: A total of 3,282 organisms (1/patient) were consecutively collected from patients hospitalised in China (10 centres [excluding Hong Kong]; n=2,243; 2013), Hong Kong (1 centre; n=452; 2013–2014), and Taiwan (1 centre; n=587; 2014–2016) and susceptibility tested by broth microdilution methods in a central laboratory (JMI Laboratories). The collection included aerobic gram-positive and gram-negative organisms from patients with pneumonia (n=974; 29.7%), bloodstream infections (n=826; 25.2%); skin and skin structure infections (n=772; 23.5%), community-acquired respiratory tract infections (n=555; 16.9%), and other infections (n=155; 4.7%).

Results: Omadacycline was very potent against *Staphylococcus aureus* (n=689; $MIC_{50/90}$, 0.12/0.25 mg/L; highest MIC, 1 mg/L), including methicillin-resistant isolates (MRSA; n=299; $MIC_{50/90}$, 0.12/0.5 mg/L), and had similar activity among geographic regions (Table). Omadacycline was also very active against *Streptococcus pneumoniae* (highest MIC, 0.25 mg/L), β-haemolytic streptococci (βHS; highest MIC, 1 mg/L), viridans group streptococci (VGS; highest MIC, 0.25 mg/L), and *Enterococcus* spp. (highest MIC 0.5 mg/L) from all geographic regions. Overall, 53.8% of *S. pneumoniae* were penicillin-resistant (PRSP; penicillin MIC, ≥2 mg/L) and 10.7% of enterococci (21.2% among *E. faecium*) were vancomycin-resistant (VRE). Omadacycline was active against *Haemophilus influenzae* ($MIC_{50/90}$, 0.5/1 mg/L; highest MIC, 2 mg/L) regardless of β-lactamase production and was active against *Moraxella catarrhalis* ($MIC_{50/90}$, ≤0.12/0.25 mg/L). When tested against *Enterobacteriaceae,* omadacycline was most active against *Escherichia coli* ($MIC_{50/90}$, 1/2 mg/L), *Klebsiella oxytoca* ($MIC_{50/90}$, 1/4 mg/L), and *Enterobacter cloacae* ($MIC_{50/90}$, 2/4 mg/L).

Conclusions: Omadacycline showed potent *in vitro* activity against gram-positive and gram-negative pathogens isolated from Greater China, and retained activity against problem pathogens, such as MRSA, VRE and PRSP. The results of this investigation support further clinical development of omadacycline in the geographic regions surveyed.

Organism	Omadacycline MIC_{50}/MIC_{90} (mg/L)		
	China	Hong Kong	Taiwan
S. aureus	0.12/0.25	0.12/0.25	0.12/0.25
MRSA	0.25/0.5	0.12/0.25	0.12/0.25
S. pneumoniae	0.06/0.12	0.06/0.12	0.06/0.12
PRSP (MIC, ≥2 mg/L)	0.06/0.12	0.06/0.12	0.12/0.12
βHS	0.12/0.25	0.12/0.5	0.12/0.5
VGS	0.06/0.12	0.06/0.25	0.06/0.12
Enterococcus spp.	0.06/0.12	0.06/--	0.06/0.12
H. influenzae	0.5/1	1/1	0.5/1
E. coli	1/2	1/2	1/2
E. cloacae	2/8	2/--	2/4