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**Objective:** To evaluate the activity of ceftobiprole and comparator agents against pathogens isolated during 2013 patients hospitalized with pneumonia in Europe and Israel. Ceftobiprole medocaril is a parenteral broad-spectrum, anti-MRSA cephalosporin with activity against Gram-positive and -negative pathogens including *Pseudomonas aeruginosa*. It is the first anti-MRSA cephalosporin approved for both the treatment of hospital-acquired pneumonia (excluding ventilator-associated pneumonia) and community-acquired pneumonia in adults in 12 European Union countries.

**Methods:** Non-duplicate consecutive isolates from patients hospitalized with pneumonia were collected during 2013 from 26 medical centers in 13 European countries and Israel. Ceftobiprole, the active form of the prodrug ceftobiprole medocaril and comparator agents were susceptibility tested according Clinical and Laboratory Standards Institute (CLSI) guidelines using validated dry-form broth microdilution panels. Quality control organisms were tested concurrently with the clinical isolates and results were within published limits. EUCAST interpretive criteria were applied according to current guidelines.

**Results:** The ceftobiprole MIC<sub>50/90</sub> values for 336 *S. aureus* were 0.5/2 mg/L, respectively. For methicillin-resistant *S. aureus* (MRSA, 28.3% of all *S. aureus*) MIC<sub>50/90</sub> values were 2/2 mg/L, respectively. The highest MIC value for methicillin-susceptible *S. aureus* (MSSA) was 0.5 mg/L and for MRSA it was 2 mg/L. Ceftobiprole was highly potent against all 47 *S. pneumoniae* isolates (100.0% susceptibility) with 48.9% of isolates with a ceftobiprole MIC value of ≤ 0.008 mg/L (highest ceftobiprole MIC, 0.5 mg/L). These included three penicillin-resistant isolates (6.4%), all with a penicillin MIC of 4 mg/L and a ceftobiprole MIC at 0.5 mg/L. These three isolates were also ceftriaxone-non-susceptible (ceftriaxone MIC, 1-2 mg/L). Ceftobiprole susceptibility for all Enterobacteriaceae was at 74.6%. A total of 74.6, 76.2, and 77.8% of all Enterobacteriaceae were at a ceftobiprole MIC value of ≤ 0.25, 0.5, and 1 mg/L, respectively. Ceftobiprole was highly active against non-ESBL phenotype *E. coli* with MIC<sub>50/90</sub> values at 0.03/0.06 mg/L (99.4% susceptible). For non-ESBL-phenotype *Klebsiella* spp. the MIC<sub>50/90</sub> for ceftobiprole was 0.03/ 0.25 mg/L (96.5% susceptible). Against ESBL-positive phenotype strains of Enterobacteriaceae ceftobiprole showed higher MIC values. The activity of ceftobiprole against *P. aeruginosa* was similar to that of ceftazidime and cefepime with MIC<sub>50/90</sub> values of 2/>8 mg/L for ceftobiprole. The MIC<sub>50/90</sub> values for *P. aeruginosa* were 4/>16 mg/L for ceftazidime and cefepime (75.4 and 75.2% susceptible, respectively).

**Conclusions:** Ceftobiprole demonstrated potent broad-spectrum in vitro activity against pathogens from European and Israeli patients hospitalized with pneumonia including MRSA, penicillin-resistant/ ceftriaxone-non-susceptible *S. pneumoniae*, Enterobacteriaceae and *P. aeruginosa*.

Table.

Organism (no.)	Cumulative % for select bacteria inhibited at ceftobiprole MIC (mg/L) of:											MIC <sub>50</sub>	MIC <sub>90</sub>	
	<=0.008	0.015	0.03	0.06	0.12	0.25	0.5	1	2	4	8			> 8
<i>Staphylococcus aureus</i> (336)	0.0	0.0	0.0	0.0	0.3	36.9	74.7	85.7	100.0	--	--	--	0.5	2
MRSA (95)	0.0	0.0	0.0	0.0	0.0	0.0	10.5	49.5	100.0	--	--	--	2	2
<i>Streptococcus pneumoniae</i> (47)	48.9	70.2	72.3	72.3	72.3	89.4	100.0	--	--	--	--	--	0.015	0.5
<i>Haemophilus influenzae</i> (54)	0.0	0.0	38.9	72.2	87.0	98.1	100.0	--	--	--	--	--	0.06	0.25
Enterobacteriaceae (743)	0.1	9.8	45.4	65.3	71.0	74.6	76.2	77.8	78.9	80.2	80.9	100.0	0.06	> 8
<i>Escherichia coli</i> (221)	0.0	9.5	55.7	73.8	78.3	80.5	81.4	81.4	81.9	82.4	82.8	100.0	0.03	> 8
ESBL-phenotype (46)	0.0	0.0	2.2	2.2	6.5	8.7	10.9	10.9	13.0	15.2	17.4	100.0	> 8	> 8
non-ESBL-phenotype (175)	0.0	12.0	69.7	92.6	97.1	99.4	100.0	--	--	--	--	--	0.03	0.06
<i>Klebsiella</i> spp. (224)	0.0	10.7	42.9	51.8	55.4	61.6	62.9	66.1	67.4	67.9	68.3	100.0	0.06	> 8
ESBL-phenotype (83)	0.0	0.0	1.2	2.4	2.4	2.4	2.4	9.6	13.3	14.5	15.7	100.0	> 8	> 8
non-ESBL-phenotype (141)	0.0	17.0	67.4	80.9	86.5	96.5	98.6	99.3	99.3	99.3	99.3	100.0	0.03	0.25
<i>Klebsiella pneumoniae</i> (172)	0.0	13.4	49.4	55.2	57.0	59.9	59.9	62.8	64.5	65.1	65.1	100.0	0.06	> 8
ESBL-phenotype (71)	0.0	0.0	1.4	2.8	2.8	2.8	2.8	9.9	14.1	15.5	15.5	100.0	> 8	> 8
non-ESBL-phenotype (101)	0.0	22.8	83.2	92.1	95.0	100.0	--	--	--	--	--	--	0.03	0.06
<i>Pseudomonas aeruginosa</i> (419)	0.0	0.0	0.0	0.0	0.0	0.2	3.1	30.8	52.0	66.1	79.7	100.0	2	> 8