

In vitro antibacterial activity of contezolid compared to linezolid and vancomycin in clinical isolates from China

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Background

Linezolid and vancomycin are insufficient in the treatment of drug-resistant Gram-positive bacteria due to adverse drug reactions and drug resistance, and new antibiotics are needed, especially for patients with myelosuppression and vancomycin-resistant *Enterococcus* (VRE) infection. ConteZolid (CZD) is a novel oral oxazolidinone with potent activity against Gram-positive pathogens, including methicillin-resistant *Staphylococcus aureus* (MRSA) and VRE. We evaluate the *in vitro* antibacterial activity of contezolid compared to linezolid and vancomycin in Gram-positive clinical isolates.

Methods

176 clinical isolates were obtained from 176 sterile body fluids from patients at 3 tertiary care hospitals in China, and the minimal inhibitory concentrations (MICs) of contezolid, linezolid and vancomycin determined by broth microdilution assay.

Results

Contezolid exhibits excellent antibacterial activity against prevalent Gram-positive bacteria, *Staphylococcus* spp. and *Enterococcus* spp., including methicillin-resistant *Staphylococcus aureus* (MRSA), methicillin-resistant and coagulase-negative *Staphylococcus* (MRCNS), and vancomycin-resistant *Enterococcus* (VRE). MIC₉₀ values of contezolid were 2 mg/L for all MRSA and VRE isolates and 1 mg/L for MRCNS isolates. The antibacterial activity of contezolid against *Staphylococcus* spp., including *S. aureus*, was essentially similar to linezolid, and slightly higher than or similar to vancomycin. Antibacterial activity of contezolid against *Enterococcus*, including VRE, was similar to linezolid, while being slightly lower than for vancomycin in vancomycin-susceptible isolates. Consistent with the shared antibacterial mode of action, bacterial strains resistant to linezolid were cross-resistant to contezolid.

Antimicrobial agents	MRSA (n=48)					MRCNS (n=29)					VRE (n=17)				
	MIC Range	MIC ₅₀	MIC ₉₀	R%	S%	MIC Range	MIC ₅₀	MIC ₉₀	R%	S%	MIC Range	MIC ₅₀	MIC ₉₀	R%	S%
Contezolid	0.5-4	1	2	0	100	0.25-2	1	1	0	100	0.5-2	2	2	0	100
Linezolid	0.5-4	2	2	0	100	0.5-2	1	1	0	100	0.5-2	2	2	0	100
Vancomycin	0.5-2	1	2	0	100	0.5-4	1	2	0	100	>8	>8	>8	100	0

Table1. Antimicrobial susceptibility testing results of clinical strains (MICs, mg/L)

MRSA, methicillin-resistant *Staphylococcus aureus*; MRCNS, methicillin-resistant and coagulase-negative *Staphylococcus*; VRE, vancomycin-resistant *Enterococcus*; MIC_{50/90}, 50%/90% minimum inhibitory concentration; %R, % of isolates resistant; %S, % of isolates susceptible.

Conclusion

Contezolid, a novel oxazolidinone drug, exhibits potent *in vitro* antibacterial activity against clinical isolates of common Gram-positive pathogens, including multidrug-resistant (MDR) Gram-positive bacteria, MRSA, MRCNS, and VRE. ConteZolid has antibacterial activity similar to standard-of-care antibiotics linezolid and vancomycin. Results suggest that contezolid can play an important role in treatment of MDR Gram-positive bacterial infections.

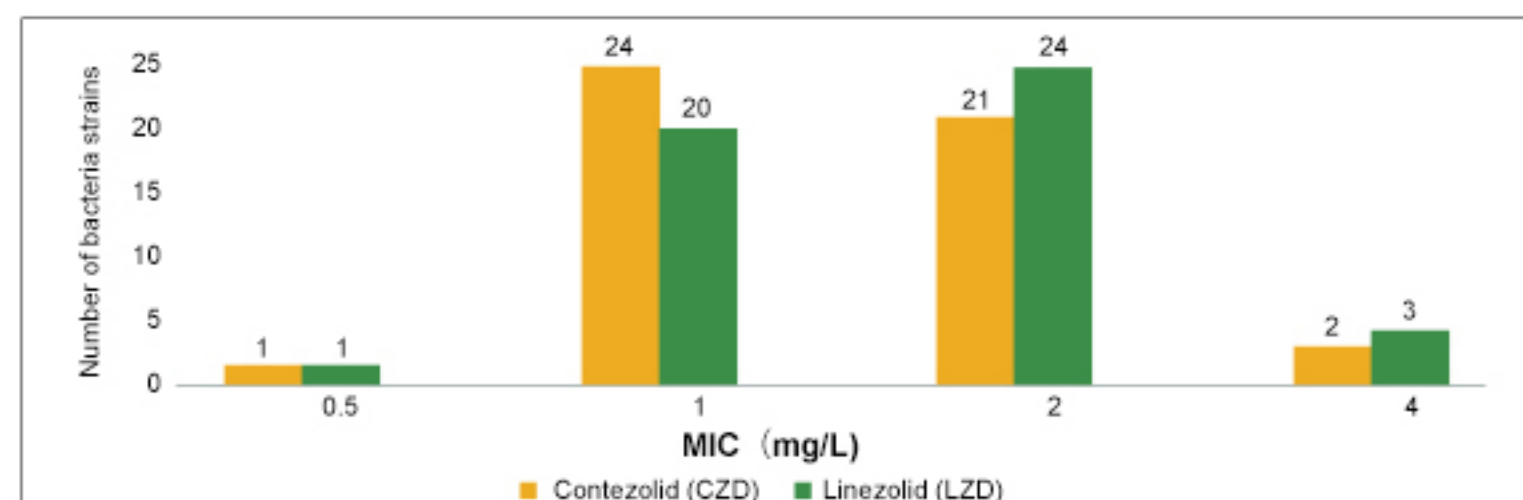


Figure1. Distribution of MICs of CZD or LZD against 48 strains of MRSA

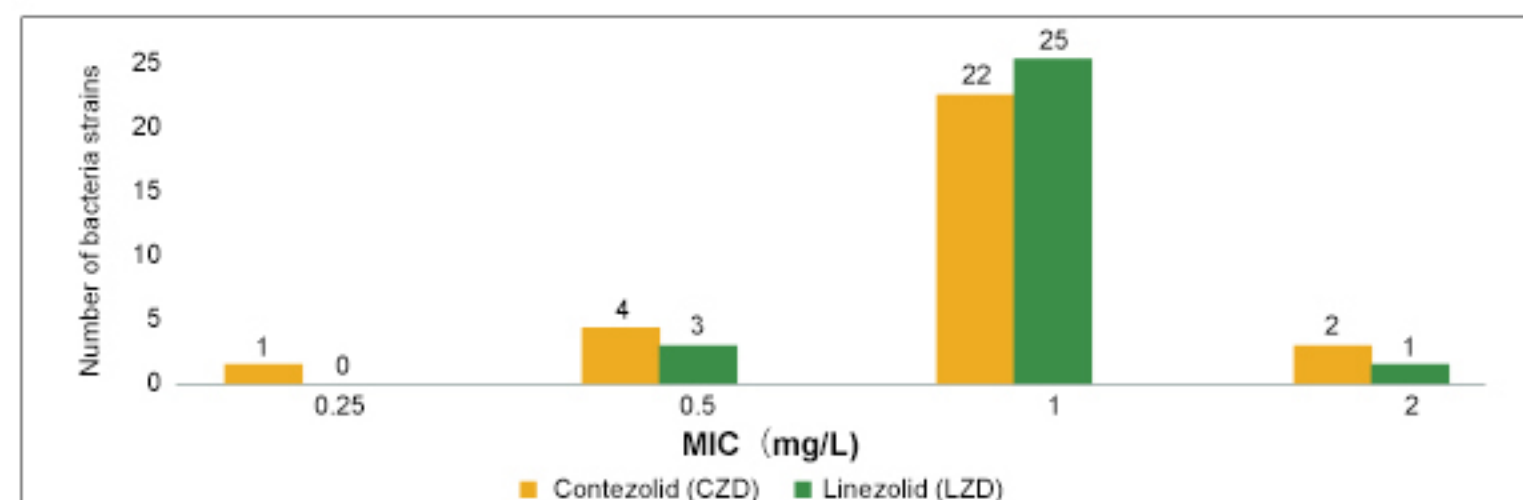


Figure2. Distribution of MICs of CZD or LZD against 29 strains of MRCNS

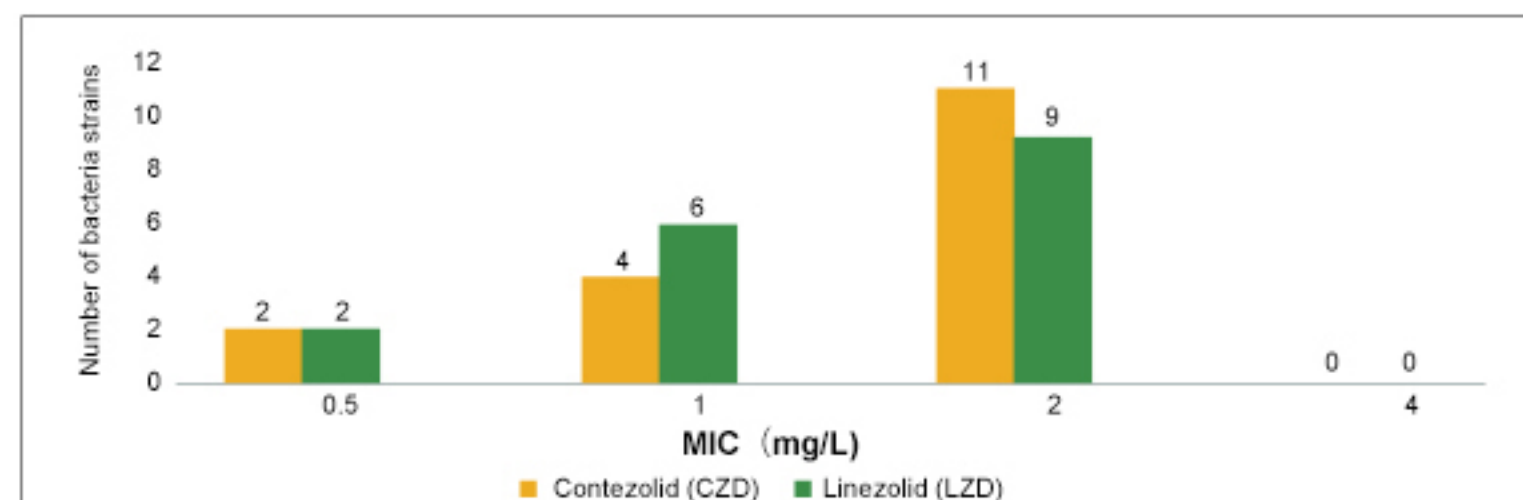


Figure3. Distribution of MICs of CZD or LZD against 17 strains of VRE

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