Efficacy of Carabavance (Meropenem+RPX7009) against Carbapenem-resistant E. coli and K. pneumoniae in a Murine UTI Model

W. J. Weiss1, M. E. Pulse1, P. Nguyen1, K. Peterson1, J. Silva1, J. W. Simecka1, D. Valtierra1, M. Sabell2, D. C. Griffith2
1Pre-Clinical Services at UNT Health Science Center, Ft. Worth, TX, 2The Medicines Company, San Diego, CA

Abstract

Background: Resistance in Enterobacteriaceae due to the increasing variety of β-lactamase enzymes, carbapenem-resistant pathogens, has become an issue of clinical concern. The objective of the study was to examine whether Carabavance (Meropenem + RPX7009), a novel antibiotic combination recently developed is susceptible in combination with carbapenem. The objective of these studies was to determine the effectiveness of Carabavance (Meropenem + RPX7009) in the presence of RPX7009. The results demonstrated that the combination is associated with an improvement in the susceptibility of RPX7009 and is being further evaluated.

Methods and Materials

Efficacy of Meropenem alone or in combination with RPX7009 against S. enterica and K. pneumoniae in the presence of RPX7009. The study was designed to determine colony counts before and after the addition of RBX7009 to the bacterial culture. The results demonstrated that the combination is associated with an improvement in the susceptibility of RPX7009 and is being further evaluated.

Results:

- **E. coli** and K. pneumoniae clinical isolates expressing the KPC-2 β-lactamase were resistant to meropenem alone at doses of 50 and 100 mg/kg.
- The addition of the β-lactamase inhibitor RPX7009 decreased meropenem MICs by >256-fold.
- There was a >2-log10 CFU lower kidney titer compared to 4 day untreated controls, meropenem alone at doses of 100 and 300 mg/kg q2hr reduced the bacterial infection in the kidneys by a clinically meaningful extent.

Conclusions:

The results indicate that Carabavance + RPX7009 may be an effective therapeutic option for the treatment of urinary tract infections caused by carbapenem-resistant Enterobacteriaceae. Clinical studies are in progress.

References


Acknowledgments

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