

IN VITRO ANTIBIOTIC SYNERGY COLISTIN-RESISTANT *KLEBSIELLA PNEUMONIAE*

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Abstract. Colistin-resistant *Klebsiella pneumoniae* (coRKP) infections can cause problems with management, increasing risk for morbidity and mortality but it is unclear which antibiotic combinations are most effective in their treatment. In this study we aimed to determine the activity of individual antibiotics and combinations of antibiotics against coRKP using minimum inhibitory concentrations (MICs) of individual antibiotics and the checkerboard technique, respectively. We used the broth microdilution technique to determine the MIC values for tigecycline, gentamicin, amikacin, fosfomycin, chloramphenicol, meropenem, imipenem, ciprofloxacin and colistin against coRKP. The studied coRKP isolates were obtained from patients treated at Phramongkutklao Hospital in Bangkok, Thailand during January 2016-December 2018. None of the isolates tested were susceptible to meropenem, imipenem, ciprofloxacin or colistin but all the isolates were susceptible to tigecycline, amikacin and gentamicin. During *in vitro* checkerboard testing, a synergistic effect was seen for the following combinations: fosfomycin plus gentamicin seen in 30% of isolates, fosfomycin plus tigecycline seen in 30% of isolates and tigecycline plus gentamicin seen in 13% of isolates. *In vivo* studies are needed to determine if these combinations result in a significantly different outcome than treatment using individual antibiotics. To summarize, there were varying sensitivity to tested antibiotics among tested isolates. The combinations of fosfomycin plus gentamicin and fosfomycin plus tigecycline should be explored further for possible combination therapy of coRKP at the studied institution.

Keywords: *Klebsiella pneumoniae*, antibiotic synergy, combination therapy

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