

ESCHERICHIA COLI CARRYING CEPHALOSPORIN (BLA) AND COLISTIN (MCR) RESISTANCE GENES ISOLATED FROM BROILERS AND PIGS IN THAILAND

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Abstract. Spread of transferable mobile genetic elements (MGEs)-mediated antimicrobial resistance in human and veterinary medicine, especially of important antimicrobials in human medicine, is of global concern. Cephalosporin- and colistin-resistant *Escherichia coli* isolates and their MGEs-mediated resistance genes (*bla* and *mcr*) in broilers and pigs in Thailand were investigated using fecal samples ($n = 45$) from 4 broiler farms and 5 pig farms (5 fecal samples per farm) during 2014 - 2015. Broiler and pig farm samples were 60 and 90% resistant to cephalosporin respectively. Among cefotaxime-resistant *E. coli* isolates ($n = 99$), *bla*_{TEM} was the most predominant (74%), followed by *bla*_{CMY-2} (45%), *bla*_{CTX-M-55} (32%), *bla*_{CTX-M-14} (29%), and *bla*_{SHV} (2%); 73% of isolates harbored multiple gene types. Among *mcr*-positive *E. coli* isolates ($n = 15$) from broiler and pig farms, *mcr-1*, *mcr-2*, *mcr-3*, and *mcr-2* + *mcr-3* were present in 33, 7, 53, and 7% of the samples; except for one isolate, the remainings were also resistant to cefotaxime. Five *bla*- and *mcr*-positive isolates exhibited co-transfer of the genes in conjugation experiments. To the best of our knowledge, this is the first study to report *mcr-2*-positive isolates in a non-European country.

Keywords: AmpC, cephalosporin resistance, colistin, ESBL, *mcr-1*, *mcr-2*, *mcr-3*

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