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Antimicrobial resistance in commensal *Escherichia coli*: Temporal changes in cohorts of pigs on farms either routinely using or not using in-feed antimicrobials and occurrence of resistant strains in pork

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Numerous studies have provided antimicrobial resistance data in pigs on farms, or in pork in retail outlets, but temporal relationships in individual pigs have not been fully evaluated. The aims of this study were: i) to evaluate whether or not routine in-feed antimicrobial use in pigs resulted in differences in antimicrobial resistance (AMR) amongst commensal *E. coli* at different stages of the production cycle, and ii) to determine whether resistant strains were present in pig meat post-slaughter. A total of 300 *E. coli* isolates were examined for antibiograms, antimicrobial resistance genes, plasmid replicons and molecular types. The isolates were from fecal samples from two cohorts, each of 10 pigs, from two farms either using or not using in-feed antimicrobials (farms A and NA, respectively), sampled four times during the production cycle. *E. coli* isolates from thigh meat were obtained post-slaughter. Nearly all isolates were resistant to β -lactam group antimicrobials and tetracycline. *E. coli* resistant to gentamicin and tobramycin containing *aadA1*, *aadA2* and *aadB* and extended-spectrum beta-lactamase producing (ESBLP) *E. coli* contained *bla*-CTX-M-1 were significantly increased in the nursery and growing periods in farm A compared to farm NA. Plasmid replicons *IncFep* and *IncFIB* were commonly found, whereas *IncI1-ly* and *IncHI2* were most common in the nursery

period. Sequence type 10 (ST10) was the most common type found in live pigs, but it was not found in pig meat. ST604, ST877, ST1209 and ST2798 containing ESBLP were found only in live pigs; whereas, ESBLP strains were found in pig meat. In conclusion, a high incidence of multidrug resistant *E. coli* was found at all collection times, but in farm A there was increased resistance to some antimicrobials in the nursery and grower period. Isolates recovered from pig meat largely differed from those detected in the feces of the same live pigs sampled during the production period.

Biography

Nuvee Prapasarakul received his Graduate Degree from the Faculty of Veterinary Science, Chulalongkorn University and his PhD from Tokyo University of Agriculture and Technology. He was granted the Fellowship from Crawford Foundation, Murdoch University, Western Australia. He has been working as an Associate Professor at his graduated school, and has been serving as the Director of General Education Center, and Director of Diagnosis and Monitoring of Animal Pathogens Research Unit, in his graduated university. His research on microbiological theories, especially diagnosis, pathogenesis and antimicrobial resistance for bacteria and fungi, is recognized with his reputed publications, continuously.

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