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Prevalence and distribution of beta-lactamase coding genes in third-generation cephalosporin-resistant *Enterobacteriaceae* isolates in Thailand and Vietnam

Antimicrobial resistance is one serious global health problems especially in Asia. Dissemination of third-generation cephalosporin-resistant (ESC-R) bacteria, carbapenem resistance bacteria, and emergence of plasmid mediated colistin resistance (*mcr*-1) bacteria play important concerns. Also presence of integron class 1 (IL-1) highlights the risk of rapid spread of resistance genes especially in clinical settings. Molecular methods for identification of broad spectrum antimicrobial resistance are high benefit. Detection methods were developed for the CTX-M extended-spectrum-β-lactamase (CTX-M-ESBL), plasmid-mediated AmpC cephalosporinase (*pAmpC*), carbapenemase, mcr-1, and integron class 1 (IL-1) genes in *Enterobacteriaceae* and identification of carbapenemase and *mcr*-1 genes in *Acinetobacter and Pseudomonas aeruginosa*. Difference in geological regions and treatment prescription may cause diversified resistance patterns. Our methods were successfully applied to study the dissemination of resistance genes at various regions. This study indicated that ESC-R bacteria harboring with one and multiple β-lactamase genes were disseminated in Thailand and Vietnam. In conclusion, epidemiological study of drug resistance pathogen should be strengthened, to provide strong guidance for clinical management, promote effective treatment of patients and use for prevention and control the spread of this antimicrobial-resistant organism.

Biography

Ratana Lawung has done her BSc and MSc in Medical Technology from Mahidol University, Thailand and PhD in Engineering (Pure and Applied Biochemistry) from Lund University, Sweden. She worked at the Department of Clinical Microbiology and Applied Technology, Faculty of Medical Technology, Mahidol University, Thailand. My research work is focused on bacterial drug resistance identification and epidemiological study of antimicrobial-resistant organism in many hospitals and centers in Thailand and South East Asia regions.

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