

3936797 PYCP/M : MAJOR : CLINICAL PHARMACY ; M.Sc. in Pharm.  
(CLINICAL PHARMACY)

KEY WORDS : GENTAMICIN/ NOMOGRAM/ ONCE DAILY DOSING OF  
AMINOGLYCOSIDE

WANICHA RUANGRITSARAKUL: THE PHARMACOKINETIC  
APPROACH TO THE DEVELOPMENT OF ONCE DAILY GENTAMICIN  
NOMOGRAM FOR THAI PATIENTS. THESIS ADVISORS: KORBTHAM  
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Although newer and safer antibacterials are available now, aminoglycosides continue to play a major role in the management of nasocomic infections in hospitals. The concept of once daily dosing of aminoglycoside (ODA) administrations was explored many years ago. Now it is clear that ODA is as effective as, or more effective than, multiple daily administration of the drug. In addition, ODA is no more, and may be less, nephrotoxic and ototoxic than multiple daily administration of the drug. Many hospitals are changing multiple-daily dosing of aminoglycoside to once-daily administration. Question remains, about optimum dose and the methods to monitor both normal patients and patients with renal impairment. Accordingly, the study was performed to investigate the fixed dose of gentamicin and develop nomogram for once-daily dosing of gentamicin using Thai patients' pharmacokinetic parameters. ODA regimens and ODA nomogram have been investigated based on the concept that the optimization of the peak concentration/MIC ratio is able to maximize bacterial killing effect and to reduce toxicity. Twenty-four Thai patients (14 females, 10 males) who were prescribed gentamicin by their physicians were chosen in this study. The median age of the patients was 51.9 years (range, 18 to 80 years). The median dose was 216.7 mg/day (range 120-300 mg/day). After given both multiple daily dosing or once daily dosing of gentamicin, five milliliters of blood were withdrawn at one hour and three hours after completion of infusion, respectively. The serum concentrations were determined by High Performance Liquid Chromatography (HPLC). The fixed dosage of gentamicin which was determined from Thai patients pharmacokinetic parameters was  $6.9 \text{ mg} \pm 1.9 \text{ mg/kg}$ .

The developed nomogram from this study is the guideline for monitoring Thai patients who are prescribed once daily dosing of gentamicin and it should be further investigated. The complete nomogram needs more Thai patients' pharmacokinetic data.