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The effect of anticoagulant types in analyzing levofloxacin in human plasma by high performance liquid chromatography-photodiode array

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Levofloxacin has low concentration in plasma, thus it requires sensitive and selective analysis method. Plasma drug analysis often uses many kinds of anticoagulant to obtain plasma as analytical matrix. Citrate, heparin, and ethylenediaminetetraacetic acid (EDTA) are anticoagulant commonly used in analyzing drug in human plasma. This study was focused on analyzing levofloxacin in human plasma with three types of anticoagulants. The analysis was performed using High Performance Liquid Chromatography (HPLC) – photodiode array with Column C18 Sunfire™ (250 x 4.6 mm), 5 µm; temperature of 45°C, mobile phase consist of 0.5% triethylamine pH 3.0 -acetonitrile (88:12 v/v); flow rate of 1.25 mL/minute, and ciprofloxacin HCl as internal standard. The method was linear at concentration range of 50.0 – 10.000.0 ng/mL with $r > 0.9994$. Accuracy and precision for citrate, heparin, and EDTA plasma fulfilled the acceptance criteria of both intra-day and inter-day. There was no significant difference for stability and recovery of levofloxacin in citrate, heparin, and EDTA plasma ($p > 0.05$; ANOVA), but it showed significant difference for peak area ratio ($p > 0.05$), between citrate-EDTA plasma and heparin-EDTA plasma for low concentration and between citrate-heparin plasma and citrate-EDTA plasma for mid and high concentration. On blank chromatogram EDTA plasma, there was interference on retention time of less than 8 minutes, while on citrate and heparin plasma there was no interference. The method can be applied for bioequivalence study using the three anticoagulants that are equally good.

Biography

Yahdiana Harahap received her education in Indonesia with BSc degree (1987) at Department of Pharmacy Faculty of Mathematics and Natural Sciences University of Indonesia. She obtained her MS (1994) and PhD (2003) in Pharmaceutical Chemistry at Department of Pharmacy Faculty of Mathematics and Natural Sciences Institute Technology Bandung. She then worked as Head of Public Service Center at Department of Pharmacy, University of Indonesia. Now she is a part of Bioavailability and Bioequivalence Laboratory, Faculty of Pharmacy, Universities Indonesia and member of BA/BE working group Indonesia, also as the Bioequivalence expert at National Agency of Drug and Food Control Republic of Indonesia.

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