Abstract: Although cephalosporins are recommended as primary agents, moxifloxacin may be a suitable second-line antibiotic in cardiac surgery, especially if additional Gram-negative coverage is warranted. Cardiopulmonary bypass (CPB) may alter the pharmacokinetics of drugs in numerous ways. Since no such data exist, the aim of this study was to assess the serum concentrations and pharmacokinetics of moxifloxacin in patients undergoing cardiac surgery with CPB. Fourteen coronary artery bypass graft surgery patients received an intravenous infusion of 400mg moxifloxacin as peri-operative antibiotic prophylaxis. At 15 time points throughout a 24-h period, serum samples were obtained to measure moxifloxacin concentrations using high-performance liquid chromatography. In addition, a non-compartmental pharmacokinetic analysis, i.e. area under the concentration-time curve (AUC), volume of distribution at steady state (VSS), drug clearance (CL), elimination half-life (t1/2) and mean residence time (MRT), was performed in five patients. Apart from a slight transient decrease in moxifloxacin concentration at the onset, CPB did not affect the concentration-time curve. Mean±standard deviation maximum drug concentration (Cmax) (5.12±1.58?g/mL), AUC (36.5±5.40?gh/mL), VSS
(2.03±0.30L/kg), CL (11.2±1.91L/h), t1/2 (9.47±0.92h) and MRT (12.9±1.52h) were comparable with historical data for healthy volunteers. We conclude that CPB does not alter the pharmacokinetics of moxifloxacin. No dose adjustments, especially with regard to the CPB circuit and its priming volume, are necessary in cardiac surgical patients.