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Analysis of Carvedilol and Its Metabolite in Human Plasma Using Liquid Chromatography Coupled with Tandem Mass Spectrometry

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Abstract : A rapid, sensitive and selective method for the determination of Carvedilol and its metabolite in human plasma was developed using liquid chromatography with tandem mass spectrometry (HPLC–MS/MS). Carvedilol, its metabolite 4-OH carvedilol and abacavir (internal standard) were extracted from human plasma by solid phase extraction technique (SPE) and analyzed on an Discovery column (C8, 50 × 4.6 mm, 5µ) with the mobile phase of acetonitrile – 0.1% formic acid in water (70:30 v/v). The analytes were detected using an electro spray ionization tandem mass spectrometry in the multiple reaction monitoring mode. The standard curve was linear (r = 0.9998) over the concentration range of 0.5–100 ng/mL and 0.3-40 ng/mL for carvedilol and 4-OH carvedilol respectively. The lower limit of quantification for carvedilol was 0.5 ng/mL and 0.3 ng/mL for carvedilol and 4-OH carvedilol respectively using 500 µL plasma samples. The coefficient of variation and relative error for intra- and inter-assay at four QC levels were 3.37 to 9.53 %, 4.76 to 7.01% and 3.31 to 6.91%, 5.23 to 6.64 % respectively. The matrix effect for carvedilol, 4-OH carvedilol and abacavir were practically absent. The extraction recoveries of carvedilol, 4-OH carvedilol and abacavir were 78.90, 83.25 and 85.20%, respectively.
Key wards : Carvedilol and its metabolite 4-OH carvedilol, Solid Phase Extraction (SPE), Method validation, LC-MS/MS.

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