

Suven Research Publications in 2005

1. Arzneimittelforschung. 2005; 55(12):762-6.

Quantification of faropenem in human plasma by high-performance liquid chromatography.

Nirogi RV, Kandikere VN, Shrivastava W, Mudigonda K.

Biopharmaceutical Research, Suven Life Sciences Ltd, Hyderabad India. nvsrk@suven.com

A simple, sensitive and specific high-performance liquid chromatography (HPLC) method with ultraviolet detection (315 nm) was developed and validated for quantitation of faropenem (CAS 106560-14-9), the newest addition to the group of beta-lactam antimicrobials, in human plasma. Following solid-phase extraction using Waters Oasis SPE cartridges, the analyte and internal standard (hydrochlorothiazide, CAS 58-93-5) were separated using an isocratic mobile phase of 10 mmol/L acetate buffer (pH adjusted to 7.0 with dilute acetic acid) /methanol / triethyl amine (70/30/0.03, v/v/v) on reverse phase Waters symmetry C18 column. The lower limit of quantitation was 200 ng/mL, with a relative standard deviation of less than 2 %. A linear range of 200 to 25000 ng/mL was established. This HPLC method was validated with between-batch and within-batch precision of 1.6 to 2.3 % and 0.4 to 1.6 %, respectively. The between-batch and within-batch bias was -3.1 to 5.3 % and -6.0 to 1.5 %, respectively. Frequently coadministered drugs did not interfere with the described methodology. The stability of faropenem in plasma was excellent, with no evidence of degradation during sample processing (autosampler) and 30 days storage in a freezer. This validated method is sensitive, simple and repeatable enough to be used in pharmacokinetic studies.

PMID: 16430031 [PubMed - indexed for MEDLINE]

2: J Chromatogr B Analyt Technol Biomed Life Sci. 2005 Sep 5; 823(2):189-94.

High-performance liquid chromatography method for the quantification of entacapone in human plasma.

Ramakrishna NV, Vishwottam KN, Wishu S, Koteshwara M, Chidambara J.

Biopharmaceutical Research, Suven Life Sciences Ltd., Serene Chambers, Road #7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, sensitive and selective HPLC method with UV detection (315 nm) was developed and validated for quantitation of entacapone in human plasma, the newest addition to the group of antiparkinsonian agents. Following a single-step liquid-liquid extraction (LLE) with ethyl acetate/n-hexane (30/70, v/v), the analyte and internal standard (rofecoxib) were separated using an isocratic mobile phase of 30 mM phosphate buffer (pH 2.75)/acetonitrile (62/38, v/v) on a reverse phase C18 column. The lower limit of quantitation was 25 ng/mL, with a relative standard deviation of less than 8%. A linear range of 25-2500 ng/mL was established. This HPLC method was validated with between-batch and within-batch precision of 2.2-4.2% and 1.7-7.8%, respectively. The between-batch and within-batch accuracy was 98.7-107.5% and 97.5-106.0%, respectively. Frequently coadministered drugs did not interfere with the described methodology. Stability of entacapone in plasma was excellent, with no evidence of degradation during sample

processing (autosampler) and 30 days storage in a freezer. This validated method is sensitive, simple and repeatable enough to be used in Pharmacokinetic studies.

Publication Types:

Clinical Trial

Research Support, Non-U.S. Gov't

PMID: 16009606 [PubMed - indexed for MEDLINE]

3: J Pharm Biomed Anal. 2005 Oct 4; 39(5):1006-13. Epub 2005 Jul 11.

Rapid quantification of nebivolol in human plasma by liquid chromatography coupled with electrospray ionization tandem mass spectrometry.

Ramakrishna NV, Vishwottam KN, Koteshwara M, Manoj S, Santosh M, Varma DP.

Biopharmaceutical Research, Suven Life Sciences Ltd., Serene Chambers, Road #7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, sensitive and rapid liquid chromatographic/electrospray ionization tandem mass spectrometric method was developed and validated for the quantitation of nebivolol in human plasma. The method involved a simple single-step liquid-liquid extraction with diethyl ether/dichloromethane (70/30). The analyte was chromatographed on Waters symmetry C18 reversed-phase chromatographic column by isocratic elution with water:acetonitrile:formic acid (30:70:0.03, v/v) and analyzed by mass spectrometry in the multiple reaction monitoring mode. The precursor to product ion transitions of m/z 406.4-151.5 and m/z 409.1-228.1 were used to measure the analyte and the internal standard (I.S.), respectively. The chromatographic runtime was 2 min and the weighted ($1/x^2$) calibration curves were linear over the range 50-10,000 pg/mL. The method was validated in terms of accuracy, precision, absolute recovery, freeze-thaw stability, bench-top stability and re-injection reproducibility. The limit of detection and lower limit of quantification in human plasma were 10 and 50 pg/mL, respectively. The within- and between-batch accuracy and precision were found to be well within acceptable limits (<10%). The analyte was stable after three freeze-thaw cycles (deviation <10%). The average absolute recoveries of nebivolol and tamsulosin, used as an internal standard, from spiked plasma samples were 73.4±3.7 and 72.1±2.0%, respectively. The assay method described here was applied to study the pharmacokinetics of nebivolol.

PMID: 16006083 [PubMed - indexed for MEDLINE]

4: J Chromatogr B Analyt Technol Biomed Life Sci. 2005 Aug 5; 822(1-2):326-9.

High-performance liquid chromatography method for the quantification of pantoprazole in human plasma.

Ramakrishna NV, Vishwottam KN, Wishu S, Koteshwara M.

Biopharmaceutical Research, Suven Life Sciences Ltd., Serene Chambers, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A sensitive and selective HPLC method with UV detection (290 nm) was developed and validated for quantitation of pantoprazole, proton-pump inhibitor, in human plasma. Following a single-step liquid-liquid extraction with methyl tert-butyl ether/diethyl ether (70/30, v/v), the analyte and internal standard (zonisamide) were separated using an isocratic mobile phase of 10mM phosphate buffer (pH 6.0)/acetonitrile (61/39, v/v) on reverse phase Waters symmetry C18 column. The lower limit of quantitation was 20 ng/mL, with a relative standard deviation of less

than 4%. A linear range of 20-5000 ng/mL was established. This HPLC method was validated with between-batch and within-batch precision of 1.3-3.2% and 0.7-3.3%, respectively. The between-batch and within-batch bias was -0.5 to 8.2 % and -2.5 to 12.1%, respectively. This validated method is sensitive and repeatable enough to be used in pharmacokinetic studies.

Publication Types:

Validation Studies

PMID: 16005696 [PubMed - indexed for MEDLINE]

5: Rapid Commun Mass Spectrom. 2005; 19(14):1970-8.

Liquid chromatography/electrospray ionization mass spectrometry method for the quantification of valproic acid in human plasma.

Ramakrishna NV, Vishwottam KN, Manoj S, Koteswara M, Santosh M, Chidambara J, Kumar BR.

Biopharmaceutical Research, Suven Life Sciences Ltd., Serene Chambers, Road # 7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, sensitive and rapid liquid chromatography/electrospray ionization mass spectrometry (LC/ESI-MS) method was developed and validated for the quantification of valproic acid, an antiepileptic drug, in human plasma using benzoic acid as internal standard (IS). Following solid-phase extraction, the analytes were separated using an isocratic mobile phase on a reversed-phase C18 column and analyzed by MS in the single ion monitoring mode using the respective [M-H]⁻ ions, m/z 143 for valproic acid and m/z 121 for the IS. The assay exhibited a linear dynamic range of 0.5-60 microg/mL for valproic acid in human 10%. Acceptable precision and accuracy were obtained for concentrations over the standard curve range. The average absolute recoveries of valproic acid and the IS from spiked plasma samples were 96.1±4.2 and 95.6±2.7%, respectively. A run time of 4.5 min for each sample made it possible to analyze more than 250 human plasma samples per day. The validated method has been successfully used to analyze human plasma samples for application in pharmacokinetic, bioavailability and bioequivalence studies. Copyright (c) 2005 John Wiley & Sons, Ltd.

PMID: 15954179 [PubMed - indexed for MEDLINE]

6: Biomed Chromatogr. 2005 Dec; 19(10):751-60.

Sensitive liquid chromatography-tandem mass spectrometry method for quantification of hydrochlorothiazide in human plasma.

Ramakrishna NV, Vishwottam KN, Manoj S, Koteswara M, Wishu S, Varma DP.

Biopharmaceutical Research, Suven Life Sciences Ltd, Serene Chambers, Road 7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, rapid, sensitive and specific liquid chromatography-tandem mass spectrometry method was developed and validated for quantification of hydrochlorothiazide (I), a common diuretic and anti-hypertensive agent. The analyte and internal standard, tamsulosin (II) were extracted by liquid-liquid extraction with diethyl ether-dichloromethane (70:30, v/v) using a Glas-Col Multi-Pulse Vortexer. The chromatographic separation was performed on a reversed-phase column (Waters symmetry C18) with a mobile phase of 10 mm ammonium acetate-methanol (15:85, v/v). The protonated analyte was quantitated in negative ionization by multiple reaction monitoring with

a mass spectrometer. The mass transitions m/z 296.1 solidus in circle 205.0 and m/z 407.2 solidus in circle 184.9 were used to measure I and II, respectively. The assay exhibited a linear dynamic range of 0.5-200 ng/mL for hydrochlorothiazide in human plasma. The lower limit of quantitation was 500 pg/mL, with a relative standard deviation of less than 9%. Acceptable precision and accuracy were obtained for concentrations over the standard curve ranges. A run time of 2.5 min for each sample made it possible to analyze a throughput of more than 400 human plasma samples per day. The validated method has been successfully used to analyze human plasma samples for application in pharmacokinetic, bioavailability or bioequivalence studies. (c)

2005 John Wiley & Sons, Ltd.

Publication Types:

Validation Studies

PMID: 15856489 [PubMed - indexed for MEDLINE]

7: Biomed Chromatogr. 2005 Dec; 19(10):709-19.

Rapid, simple and highly sensitive LC-ESI-MS/MS method for the quantification of tamsulosin in human plasma.

Ramakrishna NV, Vishwottam KN, Manoj S, Koteshwara M, Wishu S, Varma DP.

Biopharmaceutical Research, Suven Life Sciences Ltd, Serene Chambers, Road 7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, rapid, sensitive and specific liquid chromatography-tandem mass spectrometry method was developed and validated for quantification of tamsulosin (I), a highly selective α_1 -adrenoceptor antagonist used for the treatment of patients with symptomatic benign prostatic hyperplasia. The analyte dichloromethane (70:30, v/v) using a Glas-Col Multi-Pulse Vortexer. The chromatographic separation was performed on a reverse phase Waters symmetry C18 column with a mobile phase of 0.03% formic acid-acetonitrile (30:70, v/v). The protonated analyte was quantitated in positive ionization by multiple reaction monitoring with a mass spectrometer. The mass transitions m/z 409.1 solidus in circle 228.1 and m/z 422.3 solidus in circle 198.3 were used to measure I and II, respectively. The assay exhibited a linear dynamic range of 0.1-50.0 ng/mL for tamsulosin in human plasma. The lower limit of quantitation was 100 pg/mL with a relative standard deviation of less than 10%. Acceptable precision and accuracy were obtained for concentrations over the standard curve ranges. A run time of 2.0 min for each sample made it possible to analyze a throughput of more than 400 human plasma samples per day. The validated method has been successfully used to analyze human plasma samples for application in pharmacokinetic, bioavailability or bioequivalence studies. (c) 2005 John Wiley & Sons, Ltd.

PMID: 15828055 [PubMed - indexed for MEDLINE]

8: J Chromatogr B Analyt Technol Biomed Life Sci. 2005 Feb 25; 816(1-2):215-21.

Validated liquid chromatographic ultraviolet method for the quantitation of Etoricoxib in human plasma using liquid-liquid extraction.

Ramakrishna NV, Vishwottam KN, Wishu S, Koteshwara M.

Biopharmaceutical Research, Suven Life Sciences Ltd., Serene Chambers, Road # 7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, sensitive and specific HPLC method with UV detection (284 nm) was developed and validated for quantitation of Etoricoxib in human plasma, the newest addition to the group of nonsteroidal anti-inflammatory drugs—a highly selective cyclooxygenase-2 inhibitor. Following a single-step liquid-liquid extraction with diethyl ether/dichloromethane (70/30, v/v), the analyte and internal standard (Zaleplon) were separated using an isocratic mobile phase of water/acetonitrile (58/42, v/v) on reverse phase Waters symmetry C(18) column. The lower limit of quantitation was 5 ng/mL, with a relative standard deviation of less than 20%. A linear range of 5-2500 ng/mL was established. This HPLC method was validated with between- and within-batch precision of 4.1-5.1% and 1.1-2.4%, respectively. The between- and within-batch bias was -3.8-4.7% and -0.6-9.4%, respectively. Frequently coadministered drugs did not interfere with the described methodology. Stability of Etoricoxib in plasma was >90%, with no evidence of degradation during sample processing (autosampler) and 30 days storage in a freezer. This validated method is sensitive and simple with between-batch precision of <6% and was used in pharmacokinetic studies.

Publication Types:
Validation Studies

PMID: 15664353 [PubMed - indexed for MEDLINE]

9: J Chromatogr B Analyt Technol Biomed Life Sci. 2005 Feb 25; 816(1-2):209-14.

High-performance liquid chromatography method for the quantification of rabeprazole in human plasma using solid-phase extraction.

Ramakrishna NV, Vishwottam KN, Wishu S, Koteshwara M, Kumar SS.

Biopharmaceutical Research, Suven Life Sciences Ltd., Serene Chambers, Road #7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, sensitive and selective HPLC method with UV detection (284 nm) was developed and validated for quantitation of rabeprazole in human plasma, the newest addition to the group of proton-pump inhibitors. Following solid-phase extraction using Waters Oasis trade mark SPE cartridges, the analyte and internal standard (Pantoprazole) were separated using an isocratic mobile phase of 5 mM ammonium acetate buffer (pH adjusted to 7.4 with sodium hydroxide solution)/acetonitrile/methanol (45/20/35, v/v) on reverse phase Waters symmetry C(18) column. The lower limit of quantitation was 20 ng/mL, with a relative standard deviation of less than 8%. A linear range of 20-1000 ng/mL was established. This HPLC method was validated with between- and within-batch precision of 2.4-7.2% and 2.2-7.3%, respectively. The between- and within-batch bias was -1.7 to 2.6% and -2.6 to 2.1%, respectively. Frequently coadministered drugs did not interfere with the described methodology. Stability of rabeprazole in plasma was excellent, with no evidence of degradation during sample processing (autosampler) and 3 months storage in a freezer. This validated method is sensitive, simple and repeatable enough to be used in pharmacokinetic studies.

Publication Types:
Research Support, Non-U.S. Gov't
Validation Studies

PMID: 15664352 [PubMed - indexed for MEDLINE]

10: Biomed Chromatogr. 2005 Sep; 19(7):539-48.

Validation and application of a high-performance liquid chromatography—tandem mass spectrometry assay for mosapride in human plasma.



Ramakrishna NV, Vishwottam KN, Manoj S, Koteshwara M, Chidambara J, Varma DP.

Biopharmaceutical Research, Suven Life Sciences Ltd, Serene Chambers, Road 7, Banjara Hills, Hyderabad 500034, India. nvsrk@suven.com

A simple, rapid, sensitive and specific liquid chromatography-tandem mass spectrometry method was developed and validated for quantification of mosapride (I), a novel and potent gastroprokinetic agent that enhances the upper gastrointestinal motility by stimulating 5-HT₄ receptor. The analyte and internal standard, tamsulosin (II), were extracted by liquid-liquid extraction with diethyl ether-dichloromethane (70:30, v/v) using a Glas-Col Multi-Pulse Vortexer. The chromatographic separation was performed on a reversed-phase Waters symmetry C(18) column with a mobile phase of 0.03% formic acid-acetonitrile (10:90, v/v). The protonated analyte was quantitated in positive ionization by multiple reaction monitoring with a mass spectrometer. The mass transitions m/z 422.3 \rightarrow 198.3 and m/z 409.1 \rightarrow 228.1 were used to measure I and II, respectively. The assay exhibited a linear dynamic range of 0.5-100.0 ng/mL for mosapride in human plasma. The lower limit of quantitation was 500 pg/mL with a relative standard deviation of less than 15%. Acceptable precision and accuracy were obtained for concentrations over the standard curve ranges. A run time of 2.0 min for each sample made it possible to analyze a throughput of more than 400 human plasma samples per day. The validated method has been successfully used to analyze human plasma samples for application in pharmacokinetic, bioavailability or bioequivalence studies. Copyright (c) 2005 John Wiley & Sons, Ltd.

Publication Types:

Validation Studies

PMID: 15654725 [PubMed - indexed for MEDLINE]