Suven Research Publications in 2009

1. J Chromatogr B Analyt Technol Biomed Life Sci. 2009 Nov 15;877(30):3899-906. Epub 2009 Oct 8.

Liquid chromatography atmospheric pressure chemical ionization tandem mass spectrometry method for the quantification of pregabalin in human plasma.

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Abstract

A sensitive high-performance liquid chromatography positive ion atmospheric pressure chemical ionization tandem mass spectrometry method was developed and validated for the quantification of pregabalin in human plasma. Following liquid-liquid extraction, the analyte was separated using an isocratic mobile phase on a reverse-phase column and analyzed by MS/MS in the multiple reaction monitoring mode using the respective [M+H](+) ions, m/z 160-142 for pregabalin and m/z 482-258 for the internal standard. The assay exhibited a linear dynamic range of 1-10,000ng/mL for pregabalin in human plasma. The lower limit of quantification was 1ng/mL with a relative standard deviation of less than 11.4%. Acceptable precision and accuracy were obtained for concentrations over the standard curve range. A run time of 4.0min for each sample made it possible to analyze more than 300 human plasma samples per day. The validated method has been successfully used to analyze human plasma samples for application in pharmacokinetic studies.

PMID: 19837015 [PubMed - indexed for MEDLINE]

2. J Chromatogr B Analyt Technol Biomed Life Sci. 2009 Nov 1;877(29):3563-71. Epub 2009 Sep 1

Liquid chromatography-tandem mass spectrometry method for the quantification of dimebon in rat plasma and brain tissue.

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Abstract

A sensitive high-performance liquid chromatography-positive ion electrospray tandem mass spectrometry method was developed and validated for the quantification of dimebon in rat plasma and brain tissue. Following liquid-liquid extraction, the analyte was separated using a gradient mobile phase on a reversed phase column and analyzed by MS/MS in the multiple reaction monitoring mode using the respective [M+H](+) ions, m/z 320-277 for dimebon and m/z 407-100 for the internal standard. The assay exhibited a linear dynamic range of 0.25-250 ng/mL for dimebon in rat plasma and brain tissue. Acceptable precision (<11%) and accuracy (100+/-7%) were obtained for concentrations over the standard curve range. A run time of 2.5 min for each sample made it possible to analyze more than 250 samples per day. The method was

successfully applied to quantify dimebon concentrations in a rodent pharmacokinetic study. Moreover, it can be believed that the assay method in rat plasma would facilitate the ease of adaptability of dimebon quantification in human plasma for clinical trials.

PMID: 19748323 [PubMed - indexed for MEDLINE]

3. J Chromatogr Sci. 2009 Feb;47(2):164-9.

Sensitive liquid chromatography positive electrospray tandem mass spectrometry method for the quantitation of tegaserod in human plasma using liquid-liquid extraction.

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Abstract

A sensitive and rapid high-performance liquid chromatography-positive ion electrospray tandem mass spectrometry method is developed and validated for the quantitation of tegaserod in human plasma. Following liquid-liquid extraction, the analytes are separated using an isocratic mobile phase on a reversed-phase column and analyzed by tandem mass spectrometry in the multiple reaction monitoring mode using the respective (M+H)+ ions, m/z 302 to 173 for tegaserod and m/z 409 to 228 for the internal standard. The assay exhibits a linear dynamic range of 100-10000 pg/mL for tegaserod in human plasma. The lower limit of quantitation is 100 pg/mL with a relative standard deviation of less than 7%. Acceptable precision and accuracy are obtained for concentrations over the standard curve range. A run time of 2.0 min for each sample makes it possible to analyze more than 250 human plasma samples per day. The validated method is successfully used to analyze human plasma samples for application in pharmacokinetic, bioavailability, or bioequivalence studies.

PMID: 19222925 [PubMed - indexed for MEDLINE]

4. J Neurosci Methods. 2009 Mar 30;178(1):116-9. Epub 2008 Dec 6.

A simple and rapid method to collect the cerebrospinal fluid of rats and its application for the assessment of drug penetration into the central nervous system.

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Abstract

Many central nervous system (CNS) drug discovery programs require the successful collection of cerebrospinal fluid (CSF) for assessing CNS penetration and distribution of new chemical entities. The objective of the present investigation was to simplify the technique for collecting maximum CSF from cisterna magna of the rats. Rat was anesthetized with 5% halothane and positioned in a stereotaxic frame. The rat head was flexed downward at approximately 45 degrees , a depressible surface with the appearance of a rhomb between occipital protuberances and the spine of the atlas becomes visible. The 23 G needle was punctured into the cisterna magna for CSF collection without making any incision at this region. The blunt end of the needle was inserted into a 10 in. length of PE-50 tubing and other end of the tubing was connected to a

collection syringe. The non-contaminated sample was drawn into the syringe by simple aspiration. This technique is simple and can be performed by one person. The technique has a greater than 95% success rate of CSF collection and it was free of red blood cell contamination. In addition, it yielded 100-120 microL of CSF per rat. This method is simple, effective, and easy to perform and has been successfully applied in preclinical screening of novel chemical entities in neuropharmacotherapy for CNS use. The present method is demonstrated by studying the CSF concentrations of carbamazepine and raclopride.

PMID: 19109998 [PubMed - indexed for MEDLINE]

5. Biomed Chromatogr. 2009 Apr;23(4):371-81.

Simultaneous quantification of a non-nucleoside reverse transcriptase inhibitor efavirenz, a nucleoside reverse transcriptase inhibitor emtricitabine and a nucleotide reverse transcriptase inhibitor tenofovir in plasma by liquid chromatography positive ion electrospray tandem mass spectrometry.

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Abstract

A high-performance liquid chromatography/positive ion electrospray tandem mass spectrometry method for the simultaneous quantification of efavirenz, emtricitabine and tenofovir was developed and validated with 100 microL human plasma. Following solid-phase extraction, the analytes were separated using a gradient mobile phase on a reverse-phase column and analyzed by MS/MS in the multiple reaction monitoring mode using the respective [M + H]+ ions, m/z 316 to 168 for efavirenz, m/z 248-130 for emtricitabine and m/z 288-176 for tenofovir, m/z 482-258 for rosuvastatin (IS), m/z 260-116 for propranolol (IS). The method exhibited a 100-fold linear dynamic range for all the three analytes in human plasma (20-2000, 2-200 and 20-2000 ng/mL for efavirenz, emtricitabine and tenofovir respectively). The lower limit of quantification was 2 ng/mL for emtricitabine and 20 ng/mL for both efavirenz and tenofovir with a relative standard deviation of less than 11%. Acceptable precision and accuracy were obtained for concentrations over the standard curve range. The total chromatographic run time of 4 min for each sample made it possible to analyze more than 250 human plasma samples per day. The method is precise and sensitive enough for its intended purpose. The method is also successfully applied to quantify efavirenz, emtricitabine and tenofovir concentrations in a rodent pharmacokinetic study.

PMID: 18937306 [PubMed - indexed for MEDLINE]