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Analytica-2016 : Comparative analysis of RP-HPLC, turbidimetric and UV methods used for the determination of Cefepime hydrochloride in pharmaceuticals- Danilo Fernando Rodrigues - Centro Universities de Votuporanga

Danilo Fernando Rodrigues
Centro Universities de Votuporanga, Brazil

The possibility of new systematic strategies, the improvement and approval of existing techniques, carry various advantages to the pharmaceutical business, for the reason to spare as much in costs as the investigation time. Caffeine hydrochloride (CEF), an antimicrobial operator β-lactam having a place with the gathering of fourth era cephalosporin's, is a semi-engineered item which has movement against a few Gram positive and Gram negative high-impact microbes. The goal of this examination was played out a measurable investigation of normal substance of CEF acquired by turned around stage superior fluid chromatography (RPHPLC), microbiological test (turbid metric test) and UV technique, utilizing investigation of fluctuation (ANOVA). The RP-HPLC technique was performed on a C18 section (250 mmx4.6 mm) kept up at room temperature. The versatile stage consisted of water: outright ethanol (45:55, v/v) at a stream pace of 0.5 mL min-1, utilizing UV recognition at 258 nm. For playing out the turbid metric measure, Staphylococcus aureus ATCC 6538 IAL 2082 was utilized as the test microorganism and the way of life medium picked was the Casey stock. The control temperature was kept up at 35ºC±2.0ºC and hatched for four hours in the shaker. The readings of the outcomes were made in a spectrophotometer at 530 nm. The UV technique was acknowledged utilizing the gear Spectrophotometer UV Shimadzu. The retention was acquired at a frequency of 258 nm. The outcomes through ANOVA demonstrated a huge distinction between the strategies proposed for the 5% importance level. In this way, the techniques are not comparable and ought to be utilized in the quality control examination of CEF. The objective of this study was performed a statistical analysis of average contents of CEF obtained by reversed-phase high-performance liquid chromatography (RPHPLC), microbiological assay (turbidimetric test) and UV method, using analysis of variance (ANOVA). The RP-HPLC method was performed on a C18 column (250 mmx4.6 mm) maintained at room temperature. The mobile phase consisted of water: absolute ethanol (45:55, v/v) at a flow rate of 0.5 mL min-1, using UV detection at 258 nm. For performing the turbidimetric assay, Staphylococcus aureus ATCC 6538 IAL 2082 was used as the test microorganism and the culture medium chosen was the Casoy broth. The control temperature was maintained at 35ºC±2.0ºC and incubated for four hours in shaker. The readings of the results were made in spectrophotometer at 530 nm. The UV method was realized using the equipment Spectrophotometer UV Shimadzu. The absorption was obtained at a wavelength of 258 nm. The results through ANOVA showed a significant difference between the methods proposed for the 5% significance level. Thus, the methods are not equivalent and should be used in conjunction in the quality control analysis of CEF. Cefepime is a broad - spectrum new parenteral cephalosporin used to treat moderate to severe nosocomial pneumonia, empirical treatment of febrile neutropenia and infections of the skin and urinary tract. In this present study a simple, accurate and precise reverse phase high performance liquid chromatographic method was developed and validated for analysis of cefepime powder for injectable solutions along with its potency by using microbiological bioassay by four different microorganisms. A YMC C 18 (4.6 × 150 mm, 5.0 mm) column was used for cefepime separation, using isocratic elution with acetonitrile: water (70:30, v/v) and UV detection at 235 nm. Microbiological assay (bioassay) was performed using the agar diffusion method. The validation performed yielded good results in terms of linearity, precision, accuracy, and robustness. The retention time obtained for cefepime was 1.77 min and % potency of the marketed dosage form was found to be 147.9%, 100%, 83.17% and 125.8% respectively.

Biography

Danilo Fernando Rodrigues has graduated in Pharmacy from the Centro Universities de Votuporanga (2010). He has completed his Master's degree in Biotechnology from the Universide de Estadual Paulista-UNESP (2013). He is currently a Doctoral student (PhD) in Pharmaceutical Sciences Program at the School of Pharmaceutical Sciences of UNESP funded by FAPESP.

Email: danilo_frodrigues@hotmail.com

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