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Hyphenated HPLC-Q-TOFMS HILIC method for analysis of Bleomycins A2 and B2 in an intravenous infusion and plasma

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Bleomycin, the first-line treatment for many cancers, is present in the clinical administrations as a mixture of related glycopeptides - Bleomycin A2 (55-70%) and Bleomycin B2 (25-32%) together with other minor components. For better understanding of the mechanism of action of different Bleomycin fractions, especially the relation to Bleomycin resistance, a development of the powerful analytical method with the reliable identification and quantitation of Bleomycin in pharmaceutical and biological matrices is highly important. Methods used for the analysis of Bleomycins include the approaches based on HPLC-UV with an ion-pair reagent precluding a combination of HPLC and mass spectrometry. Therefore, in this work, an HPLC method based on HILIC (Hydrophilic Interaction Chromatography) principles was proposed for the separation, identification and determination of both major Bleomycin fractions when using an on-line combined MS detection (Q-TOFMS). The performance parameters of the HPLC-Q-TOFMS method showed high reliability, selectivity and sensitivity of the method with ng/ml-pg/ml LOD and determination of the accurate molecular weight of the analytes. The applications reported include determination of the Bleomycin A2 and B2 in the commercial infusions and identification of Bleomycin A2 and B2 in plasma samples. It may be concluded that the proposed HPLC-Q-TOFMS method is a powerful tool for the separation, identification and determination of two major Bleomycin fractions with a possibility to determine an accurate molecular weight of these fractions in the samples. The exact characterization as well as simple, sensitive and reliable monitoring in variable multicomponent matrices is made possible by our method.

Biography

Novotny L has obtained his PharmD from Faculty of Pharmacy in Hradec Kralove, Charles University in Prague and completed his PhD at the Institute of Organic Chemistry and Biochemistry, Czechoslovak Academy of Sciences in Prague, Czech Republic. He taught at the Department of Pharmaceutical Chemistry, Faculty of Pharmacy, Bratislava, Slovakia and worked at Cancer Research Institute, Slovak Academy of Sciences in Bratislava and as a Visiting Scientist at M.D. Anderson Cancer Center, Houston, USA. He has served as a Dean of the Faculty of Pharmacy, Kuwait University from 2003 to 2014. He has published more than 140 scientific papers.

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