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Plasma level determination of Imatinib with LC-MS/MS. A comparison between ion trap and triple quad mass spectrometric detection

*J. Emmert¹, P. Findeisen¹, M. Neumaier¹, P. La Rosee², R. Schreiner³

¹University of Heidelberg, Department of Clinical Chemistry, Mannheim, Germany

²University of Heidelberg, 3rd Medical Clinic, Mannheim, Germany

³Laboratory Limbach, Toxicology, Heidelberg, Germany

Despite excellent treatment results for Imatinib in chronic myeloid leukemia, a substantial proportion of patients does not achieve prognostically relevant milestones such as complete cytogenetic response or major molecular response (CCR, MMR) (1). Suboptimal Imatinib plasma levels may be a major cause for resistance and plasma level monitoring might become an important tool to guide treatment decisions in this regard.

Using D₈-Imatinib as internal standard different sample clean-up methods are compared, including deproteination and solid phase extraction with ion exchange columns. These results are compared to those obtained with liquid-liquid extraction (2). Also chromatographic conditions are varied to obtain best ion yields and stable MS signals in different samples without matrix effects. Furthermore quantitative results obtained with an ion-trap instrument are compared to those of a triple quad mass spectrometer. For different methods the linearity, limit of detection and recovery is calculated independently and finally an optimized method is presented for monitoring of Imatinib plasma levels.

References:

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2. Titier K, Picard S, Ducint D, Teilhet E, et al. Ther Drug Monit 2005;27:634-40.