

## عنوان مقاله:

Rapid and specific chromatography method on monolithic RP-column for determination of high-dose methotrexate pharmacokinetics in sera of cancer patients admitted to Shiraz Amir Hospital

## محل انتشار:

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## خلاصه مقاله:

Introduction: methotrexate (MTX) is a routinely used antifolate for the treatment of solid tumors and hematologic malignancies. However, high-dose MTX can lead to severe side effects and the patients are required to receive leucovorin rescue. Hence, we aimed to develop a fast and specific HPLC method for monitoring MTX level in sera of cancer patients. Methods: HPLC analysis was carried out on a Chromolith RP-18 monolithic column. The assay method was validated in terms of specificity, linearity, accuracy, precision, and limit of quantification. Using pharmacokinetic equations and limited blood sampling from each patient at 24 and 48 h after initiation of MTX therapy, it was attempted to predict the serum MTX level for discontinuation of leucovorin. Results: the HPLC assay method was successfully validated for determination of the MTX level in combination with other concomitantly used drugs in the sera of cancer patients with a considerable decline in the analysis time (a total run time of less than 4 min). In addition, the HPLC assay method was favorably applied to the determination of MTX pharmacokinetic parameters using two-compartmental model approach. It was revealed that the MTX levels were in toxic range in some patients and the MTX pharmacokinetic parameters varied in range of 17-97% among the patients. Conclusion: monitoring the MTX level in patient serum, especially when prescribed in high doses, is highly demanded.

## کلمات کلیدی:

Methotrexate, monolithic column, Liquid chromatography, pharmacokinetics, therapeutic drug monitoring

