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HPTLC determination of perphenazine in human urine sample after preconcentration using dispersive perphenazine magnetic molecular imprinted polymer: comparing with HPLC results

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Abstract: Therapeutic drug monitoring (TDM) plays an increasingly important role in the clinical use of tricyclic antidepressants such as perphenazine (PPZ) and other psychiatric drugs [1]. To the best of our knowledge, techniques available for monitoring perphenazine and other neuroleptics are gas chromatography (GC) and high-performance liquid chromatography (HPLC). Level of drugs in urine are usually lower than limit of detection (LOD) of the two above mentioned method of determinations. On the other side, complex matrix of biological samples makes direct measurements dificults and clean up and/or pre-concentration procedure is required prior to determination. High-performance thin-layer chromatography (HPTLC) is an alternative technique to HPLC [2, 3]. In this study, a new, simple, accurate, and precise normal phase HPTLC method coupled to dispersive solid phase extraction based on magnetic molecularly imprinted polymer (MMIP) has been established for analysis of PPZ in human urine sample. Finally, the results obtain from HPTLC method are compared with those of HPLC as standard method reported by United State Pharmacopeia method for PPZ assay. Reversed phase HPLC and normal phase HPTLC were both linear over range of 25–5000 ng/mL of PPZ with detection limit of 1.3 ng mL^{-1} and 10 ng/spot for HPLC and HPTLC , respectively. The results showed 99.76% and 90.81% recovery along with the relative standard deviation of 1.89% (n = 6) and 3.33 % for HPLC and HPTLC, consequently.

Keywords: perphenazine; HPLC; magnetic molecular imprinted polymers

References

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