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Analysis of metformin, glimepiride and pioglitazone in human serum and its application to pharmacokinetics

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A robust method, for the chromatographic separation of three antidiabetic drugs viz metformin, pioglitazone and glimepiride using an isocratic reversed phase high-performance liquid chromatographic (HPLC) system having ultraviolet detection at 254 nm is presented in this paper. The method was developed in human serum and dosage formulation with high-quality chromatographic separation between the drug peaks by using a stainless steel analytical column Nucleosil, C_{18} (10 microm, 25x0.46 cm). The parametric statistics i.e. correlation coefficient of 0.999 was assessed for all the drugs having linearity over the tested concentration range (10 to 10000 ng/mL) in human serum. The accuracy and the relative standard deviations of samples for six replicate measurements were not less than 97% and greater than 2% respectively. The proposed method was validated for selectivity, linearity, accuracy, and precision according to International conference on harmonization (ICH). The method is applicable for the quality control of mentioned drugs in raw material, bulk drug, and pharmaceuticals formulation as well as in human serum.

Key Words: Metformin, Pioglitazone, Glimepride, Pharmaceutical formulations, RP-HPLCM, Pharmacokinetics

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