

Alternative Technique for Dosing of Digoxin in Dissolution Samples †

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Abstract: Digoxin is a type of medicine called a cardiac glycoside used to control some heart problems, such as irregular heartbeats (arrhythmias), including atrial fibrillation. This drug is characterized by a narrow therapeutic range (0.5–2.0 ng mL⁻¹ in serum). Considering this level of concentration, to perform pharmacokinetics, bioequivalence, or therapeutic drug monitoring studies, it is necessary to develop sensitive and selective methods. Dissolution testing is routine quality control that also provides substantial data for estimating the bioavailability of solid oral dosage forms. Quantification of digoxin in the dissolution samples is based on the measurement of fluorescence induced by exposing the drug to drastic conditions. The objective of this work is to develop a simple HPLC-UV method for determining digoxin after dissolution without derivatization by using molecularly printed polymers (MIP) to improve selectivity and sensitivity. Satisfactory results were obtained, retaining specifically digoxin (92.3%). This methodology allows the pre-concentration of digoxin 10 times after dissolution testing, without fluorescence detection, in a fast way with low solvent consumption, reuse of the polymers, and minimum cost and difficulty of work. They achieved limits of detection to 0.15 µg/ml.

Keywords: MIP; digoxin; HPLC-UV.

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Conflicts of Interest

The authors declare no conflict of interest.