DEVELOPMENT OF SIMULTANEOUS DETERMINATION METHOD FOR CAPTOPRIL AND FUROSEMIDE IN COMPOUNDED SYRUPS

Alfred-Ugbenbo D., Zdoryk O. A. Georgiyants V.A.
National University of Pharmacy, Kharkiv, Ukraine
audeghinmotei@gmail.com

Introduction. Captopril is a potent, competitive inhibitor of angiotensin-converting enzyme (ACE), the enzyme responsible for the conversion of angiotensin I to angiotensin II. It is indicated for hypertension, heart failure and proteinuria in nephritis. Syrups consisting of ACE inhibitors and diuretics combinations are also compounded as convenient dosage forms for both paediatric and geriatric patients for management of hypertension. As a physicochemical method, thin layer chromatography (TLC) is effective but not limited to separation and identification of substances in multicomponent formulations. It may also be used for stability study if compounded preparations.

Aim: The purpose of our work is to simultaneously identify captopril and furosemide in multicomponent compounded syrups using TLC method and observe the influence of excipients and dispersion media on obtained results.

Materials and Method: For this purpose, a compounded syrup containing syrup USP, commercial tablets of captopril (Arterium batch 149682, Ukraine) and furosemide (Sanofi batch 114402, Ukraine) was prepared. Pharmaceutical substances: 15mg furosemide (Ipca Laboratories Ltd. India, certificate of analysis batch 5074HRII) 15mg (Changzhou Pharmaceutical Factory, certificate of analysis batch EC160811) were dissolved in 30ml methanol and sonicated for 5 minutes. The solutions were filled to 50 ml with the same solvent to form 0.3 mg/ml analytical solutions. For test solution, a quantity of syrup containing the same amount of substances as above was dissolved in 50ml methanol and filtered. 5 μL each of these samples were applied to the start line of a silicagel 254 nm chromatographic plate and allowed to migrate over a distance of 8cm in a chloroform-ethylacetate-glacial acetic acid (7:3:0.5 v/v ml) mobile phase. The plates were then dried in air and observed under a 254nm ultraviolet (UV) light. The plates were later sprayed with iodine fumes and observed under the UV light.

Results and Discussion: In day light, no spot is seen on the chromatographs. Under UV light, purplish spots corresponding to furosemide (R_f- 53) are seen. After spraying the plate with iodine fumes, yellow spots representing are seen. Dark brown and purplish spots corresponding to captopril (R_f- 28) and furosemide respectively are seen for both reference and test solutions when placed under the UV light. Sucrose and excipients remained on the start line and had no effect on the analytes.

Conclusion: This method could be used for simultaneous identification of captopril and furosemide in compounded syrups after optimisation and validation. Excipients and dispersion had no significant effect on results of analysis.