ANALYSIS OF TORASEMIDE BY CHROMATOSPECTROPHOTOMETRIC METHOD

Abdullabekova N.A.[1]
Usmanalieva Z.U.[2]
[1]Tashkent Pharmaceutical Institute, Tashkent city, Republic of Uzbekistan
[2]Pharmaceutical Educational and Research Institute, Tashkent city, Republic of Uzbekistan
e-mail: nargizachemist@mail.ru
https://doi.org/10.5281/zenodo.17344243

Relevance: Torasemide is a loop diuretic. When used in low doses, its diuresis rate is similar to that of the thiazide group, and the maximum effect is achieved 2 hours after administration. The drug is rapidly and almost completely absorbed into the blood. In patients with impaired liver function, an increase in the concentration of torasemide in the blood plasma is observed. Therefore, such patients should exercise caution. The toxic effect of torasemide can lead to serious complications such as arterial hypotension, confusion, thrombosis, cardiac arrhythmias, angina pectoris and acute myocardial infarction as a result of impaired water and electrolyte balance, increased metabolic alkalosis and excessive diuresis. From the urinary system. In patients with impaired urinary excretion, it can lead to rapid urine output, its retention and overdistension of the bladder. Sometimes the level of uric acid, glucose, lipids in the blood increases.

The purpose of the study: In forensic chemistry practice, the chromatospectrophotometric method is used to determine the amount of toxic substances extracted from biological objects and biological fluids. In this case, toxic substances extracted from biological objects are purified from foreign substances by thin layer chromatography, and then the amount of the substance is determined by UV-spectrophotometry. Therefore, the aim of the study was to determine the amount of the drug torasemide by chromatospectrophotometric method.

Methods and styles: To determine the amount of torasemide by chromatospectrophotometric method, 0.1 ml of a standard solution of torasemide in ethyl alcohol containing 1 mg/ml was dripped onto the start line of 5 chromatographic plates of the brand "Silufol UV 254" and dried at room temperature. Then, the plates were placed in chromatographic chambers saturated with a mixture of organic solvents: ethyl acetate: ethanol: ammonia 25% (8.5:1:0.5) and their vapors were added. The solvent mixture rose to a height of 10 cm and when it reached the finish line, the plates were removed and dried at room temperature. In order to determine the areas of elevated concentration of substances on the chromatographic plates, they were marked using a UB-254 lamp, and the part where the drug substances were dropped was scraped off the sorbent layers. The eluate was filtered into a small amount of 0.1M hydrochloric acid, transferred to a 10 ml volumetric flask and made up to the mark with 0.1M hydrochloric acid. The solution was thoroughly mixed and filtered through a 0.45 micron filter. Then, the analysis was carried out on an Agilent Technologies 8453 E Spectroscopy System UV spectrophotometer, in a cuvette with a layer thickness of 10 mm, at a wavelength of 287 nm. 0.1M hydrochloric acid was taken as a reference solution. The amount of torasemide was determined spectrophotometrically using a calibration chart prepared based on standard sample solutions of torasemide in 0.1M hydrochloric acid, which contained 0.2-2.0 μg/ml in a pre-prepared solution. The metrological report of the quantitative analysis of torasemide determined by the chromospectrophotometric method was calculated according to the DF XI edition.

Results: The chromatospectrophotometric analysis of torasemide revealed an average determination of 90.78%, with a relative error of 2.17%.

Conclusions: The amount of torasemide was determined by chromatospectrophotometric method. The developed method can be used to purify and quantify torasemide isolated from biological objects.