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OF YOUNG SCIENTISTS

ABSTRACTS

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CONFERENCE TOPICS

1. Chemistry, biology, pharmacology, technology and biotechnology of natural compounds, organic chemistry;
2. Successes and problems of creation of new drugs.

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DEVELOPMENT OF UV-SPECTROPHOTOMETRIC ANALYSIS METHODS FOR TORASEMIDE

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Relevance: Torasemide is a diuretic drug, when it is used incorrectly, there is an increase in water and electrolyte imbalances in the cardiovascular system: hypovolemia, hypokalemia, hyponatremia. Torasemide is a loop diuretic administered in low doses. At higher doses, torasemide induces potent diuresis, characterized by a maximal effect. Overdose can lead to intensified diuresis with the risk of fluid and electrolyte loss, resulting in headache, weakness, drowsiness, arterial hypotension, and vascular insufficiency. Gastrointestinal tract disorders are possible. Patients with impaired liver function exhibit an increased plasma concentration of torasemide, attributed to decreased hepatic metabolism. In patients with cardiac or hepatic insufficiency, the half-life of torasemide and its M5 metabolite is slightly prolonged.

Aim: To develop a UV-spectrophotometric method for the analysis of torasemide.

Methods: The UV-spectrophotometric analysis of the torasemide standard was performed using Agilent Technologies 8453E Spectroscopy System. For this purpose, 0.02 g of the torasemide standard was weighed, transferred into a 100 mL volumetric flask, dissolved in 0.1 N hydrochloric acid, and diluted to the mark. The solution was thoroughly mixed and filtered through a 0.45 μm filter (Solution A). Working standard solutions (Solution B) containing 2-20 μg/mL of torasemide were prepared from Solution A. Analysis was performed in a 10 mm path length cuvette, within a 200 to 400 nm wavelength range, using 0.1 N hydrochloric acid as the reference.

Results: It was confirmed that the 0.1 N hydrochloric acid solution of torasemide exhibits a maximum absorbance at a wavelength of 287 nm.

Conclusion: The UV-spectrophotometric analysis of torasemide was studied. It was determined that the 0.1 N hydrochloric acid solution of torasemide has a maximum absorbance at 287 nm. The linearity, accuracy, and repeatability of the method were evaluated. The specific and molar absorptivity of torasemide were found to be 34.54 and 1263, respectively. The quantitative analysis of torasemide using the UV-spectrophotometric method was calculated through the constructed calibration curve, with an average content of 100.23%. The average relative error was found to be E_{ave}=0,486. The obtained results indicate the potential applicability of this method for determining torasemide isolated from biological objects and biological fluids.