AUTHENTICITY AND QUANTITATIVE DETERMINATION OF VINPOCETINE

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Introduction: Vinpocetine (Cavinton) is used to correct disorders of cerebral circulation. The drug improves the blood supply to the brain, especially in areas of ischemia, improves the tolerance of hypoxia to brain cells, dilates the brain vessels, mainly due to a decrease in resistance, without affecting the system parameters: (BP, HR). It is used in the treatment of acute and chronic cerebrovascular diseases, the drug improves the delivery of oxygen to the cells, increases adaptation to hypoxia, and also increases the absorption of glucose and its utilization. Vinpocetine was first isolated from the Periwinkle Small plant in 1975 by the Hungarian chemist Chaba Santay. It is synthesized from Vincamine – an alkaloid, a Vinca minor L. plant. Synthetic drug began to be produced in 1978 by the Hungarian pharmaceutical company Gedeon Richter.

Objective of the study: To study the methods of identification and quantification of Vinpocetine.

Materials and methods: The object of study is Vinpocetine (drug substance, tablets, injection solution), as well as chemical and physico-chemical methods for its analysis.

Results and discussion: According to the literature, Vinpocetine is a derivative of carbazole, is a heterocyclic system comprising pyrrole, condensed with two atoms of benzene, is an ester of apovincaminic acid. It is a white or creamy crystalline odorless powder, practically insoluble in water, soluble in alcohol. To determine the authenticity of Vinpocetine, reactions with Dragendorff reagent and picric acid are used. To carry out authenticity reactions on vinpocetin, it is dissolved in a 0.1 M solution of hydrochloric acid and a few drops of Dragendorff reagent are added, and an orange color is observed. With picric acid, Vinpocetine forms a yellow-colored picrate with a characteristic melting point. Also, to determine the authenticity of vinpocetine used spectrophotometry in the UV region. The UV spectra of Vinpocetin are recorded with a spectrophotometer in ethanol and in a 0.01 M solution of hydrochloric acid. UV absorption spectra of vinpocetine in ethanol have maxima (± 2 nm) at 227, 272, 314 nm, and in 0.01 M hydrochloric acid – 228, 270, 315 nm, which allows for the identification of Vinpocetine. Currently, HPLC is used to confirm the authenticity of vinpocetine. The determination of Vinpocetine is carried out according to the retention time of the main peak of the chromatogram of its solution with UV – detection at a wavelength of 311 nm. For quantitative determination using chemical and physico – chemical methods of analysis. Quantitative determination of Vinpocetine carried out by the method of acidimetry in a non-aqueous medium. To enhance the basic properties of the sample is dissolved in glacial acetic acid and titrated with 0.1 M acid solution, setting the end of the titration using an indicator – a solution of crystal violet. UV spectrophotometry is also used for the quantitative analysis of vinpocetine. To determine prepared standard and analyzed solution of vinpocetine in ethanol. Then measure the optical density of the standard and analyzed solutions on a spectrophotometer at a wavelength of 314 nm in a cuvette with a layer thickness of 10 mm. The content of vinpocetine is determined by comparing the optical density of standard and analyzed solutions.

Conclusions: The possibility of using chemical and physicochemical methods for the identification and quantitative determination of Vinpocetine has been studied. Identification of Vinpocetine is recommended using chemical reactions and UV absorption spectra. Promising is the HPLC method. For the quantitative determination of Vinpocetine used non-aqueous titration and spectrophotometry in the UV region.