DETERMINATION OF THE SPECIFIC ABSORPTION OF THE 5-HYDROXYMETHYLFURFURAL FOR QUANTITATIVE DETERMINATION OF INULIN BY UV-SPECTROPHOTOMETRIC METHOD

Proskurina K. I., Smelova N. N., Dolzhko D.V., Yevtifieieva O. A.
National University of Pharmacy, Kharkiv, Ukraine.
ksenapharm@yahoo.com

Introduction. Spectrophotometric method by specific absorption is recommended for quality control of various pharmaceutical substances in State Pharmacopoeia of Ukraine (SPhU), European, British, International Pharmacopoeias and Pharmacopoeia of USA. Spectrophotometric method by specific absorption is characterized by simplicity of execution, economic and does not require the use of standard samples.

Aim. 5-hydroxymethylfurfural (5-HMF) – is the product of the inulin substance after acid hydrolysis. The aim of our work is experimental determination of the specific absorption of 5-HMF.

Materials and methods. The substance of inulin manufactured by Alfa Aesar No. A18425 batch number H5597 was used in the experimental researches. The analytical balance AV 204 S/A METTLER TOLEDO was used. Reagents, measuring glass-ware of class A (first class) and excipients meeting the requirements of the SPhU were used for the work. The spectrophotometer "SPECORD 200" was used in the work. The measurements were performed with 1-cm cells at (20±1) °C.

Results and discussion. The specific absorbance of 5-HMF obtained in the course of hydrolysis has been determined experimentally. The absorption maximum of 5-HMF is at the wavelength of 285 nm. The results of determination of the specific absorption ($A_{1см}^{1\%}$) of 5-HMF are shown in Table.

Tab. The results of determining of the specific absorption ($A_{1см}^{1\%}$) of 5-HMF.

№	Introduced inulin, g/ml·10^{-5}	The optical density, A*	$A_{1см}^{1\%}$	Metrological characteristics
1	2.56	0.5978	252.92	$\overline{X}$=258.16
2	2.88	0.6880	258.72	S = 3.00
3	3.20	0.7679	259.91	$S_{\bar{X}}$=1.34
4	3.56	0.8415	258.93	$\Delta\bar{X}$=2.86
5	3.84	0.9229	260.31	$\bar{\varepsilon}_{\bar{X}}$=1.11%

* – the average value of three measurements

Conclusions. According of the results of study of the dependence of absorbance on the concentration of inulin substance in the solution the specific absorption of 5-HMF for substance inulin is 258±2.86.