AGE THE ANALYTICAL SCREENING OF GLIBENCLAMIDE FOR CHEMICAL-TOXICOLOGICAL ANALYSIS

Kucher T.V., Merzlikin S.I.
The National University of Pharmacy, Kharkiv, Ukraine
TanyaKucher@list.ru

Diabetes mellitus type 2 treatment is based on the usage of oral antidiabetic drugs (ADD), which belong to different compound classes. They are: derivatives of biguanide (metformin), sulfonylureas (glibenclamide, gliclazide, glipizide, glimepiride), glinides (repaglinide), thiazolidinediones (pioglitazone) and others. Sulfonylureas derivatives are the leading group of antidiabetic drug market - about 30% in the CIS countries. Glibenclamide produces in many countries as mono-drugs (Betanaz, Glamid, Glibex, Daon, Euglucon, Maninil) in tablets of 1.5, 2, 3, 5 and 6 mg and in the combination with metformin (Glucovance, Glibomet, Duotrol, Glibofor). According to data of Food and Drug Administration (FDA) and patientsville.com web-site the number of reported cases of glibenclamide poisoning in 2008-2012 were 773. There were 68 reported about death, among them were 27 suicide. Lethal poisoning caused by overdosing and development of lactoacidosis, cardiovascular complications, etc. Lifelong application, growing number of patients with diabetes mellitus (260 million worldwide, 2 million in Ukraine), side effects, combined therapy with other ADD, OTC selling – are factors of toxicological hazards of uncontrolled usage of this drug. Thus, the development of the suitable methods for the chemical- toxicological analysis of glibenclamide is an actual problem.

The aim of our work was to define the conditions for glibenclamide analytical screening for the chemical-toxicological investigations.

Materials and methods: the reactions were made *in vitro* and on the chromatographic plates (1×1cm) with chloroform solutions of glibenclamide. Were used Liebermann`s, Bushard`s, Nessler`s, Dragendorff spray modified on Munier, Wagner`s, Froehde`s, Marqui`s, Erdmann`s, Mandelin`s reagents, 10% solution of $FeCl_3$, acids: H_2SO_4, HNO_3, irradiation by UV light (λ=254 nm).

Obtained results: it was revealed, that reagents form with glibenclamide different colors: Liebermann`s (red colour, limit of detection 1 mg), Nessler`s (brown-red → yellow-green → green, 3 mg) Dragendorff spray modified on Munje (brown, 0.5 mg), Bushard`s (orange, 0.5 mg), Wagner`s (red-brown, 0.5 mg), an aqueous solution of $CuSO_4$ (blue-purple → blue-green, 5 mg), irradiation of UV light (brown, 1 mg).

Conclusions: group and specific reagents for analytical screening of glibenclamide were defined.