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SEARCH FOR HYPOGLYCEMIC AGENTS AMONG 1,2,4-TRIAZOLE DERIVATIVES

Summary. *This paper studied the effect of these substances, substituted 1,2,4-triazole, the level of glucose in the blood glucose tolerance test. A number of compounds with hypoglycemic action. Some regularities between chemical structure and pharmacological effect.*

Keywords: *1,2,4-triazoles, hypoglycemic activity, structure-activity relationship*

Diabetes is a global problem that is only growing over the years. According to statistics, 371 million people in the world suffer from this disease, which is 7 percent of the world's population [1, 2].

The main reason for the growth of the disease is a radical change in lifestyle. According to statisticians, if the situation does not change, by 2025 the number of diabetics will double [2, 3].

The aim of these studies was to detect the hypoglycemic effect of the first synthesized compounds of 1,2,4-triazole derivatives under the conditions of screening studies.

Possible hypoglycemic activity of the new substance is assessed by changes in the concentration of glucose in the blood of animals after a single injection under conditions of intraperitoneal glucose tolerance test (IGTT) - glucose (2 g / kg body weight) is administered intraperitoneally [3, 4].

Blood samples for glucose analysis are taken before and after 15, 30 and 45 minutes after exercise. In order to exclude the effect of food on the absorption of the test substance, animal feeding was stopped overnight. The test substance should be administered orally by gavage in aqueous solution. Since most antidiabetic drugs act in the dose range from 5 mg / kg body weight to 200 mg / kg body weight, and 1,2,4-triazole derivatives are characterized by low toxicity, it was decided to use a dose of 200 mg / kg. Determination of blood glucose was performed using an express analyzer "Accu Chek active". 5 rats were used for each dose during screening. Each series of experiments included a control group (animals receiving placebo) and a group administered glibenclamide at a dose of 1 mg / kg. The experimental groups were quantified on a personal computer based on the LinuxMint 19.3 operating system using the NumPy (BSD License, v. 1.18.4) and pandas (BSD License, v. 1.0.3) libraries for the Python programming language.3.6.9). Statistical significance of intergroup differences was determined using Student's t-test and Whitney-Mann u-test using the SciPy library (BSD License) [3, 4].

When studying the hypoglycemic action of derivatives of 5-Alk- (Ar-, Het -) - 4-R-1,2,4-triazole-3-thiones, it was found that compounds that would exceed the reference drug glibenclamide were not detected.

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The analysis revealed the dependence of the decrease in glucose levels in the blood of animals on the chemical structure of the applied derivatives of 1,2,4-triazole.

Thus, it was found that the replacement of the ammonium cation in the molecule of ammonium salt of 2-(5-adamantan-1-yl)-4*H*-1,2,4-triazol-3-ylsulfanyl)acetic acid by a monoethanolammonium cation leads to a loss of the ability to cause hyperglycemiaand leads to hypoglycemic properties of this compound ($p<0.001$, $p<0.01$).

Thus, the search for hypoglycemic agents among 1,2,4-triazole derivatives is relevant and has prospects in their practical significance.

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