at +24° C all extracts had a dark brown color indicating the presence of a large number of silver nanoparticles in these samples (fig. 3).

Fig.1.Solutions of extracts of wormwood with silver (1 day)

Fig.2. Solutions of extracts of wormwood with silver (2 days)

Fig.3. Solutions of extracts of wormwood with silver (7 days)

The differences in the colors of the resulting solution can be caused by the different compounds extraction in three variants. For example, we obtained the extract with phenolic compounds when used ethanol (No 1) for the extraction. Extract contained sugars were obtained in case of water using for the extraction (No 2 and 3). Differences in color variation in variants No 2 and No 3 can be due to the extraction of different compounds at +24° (variant No 2) C and +80° C (variant No 3).

Conclusions: Hereby, the possibility of silver nanoparticles obtaining using extracts of *Artemisia tilesii* «hairy» root extracts was demonstrated. The most effective synthesis was found in case of using water extract. At the same time, ethanol extract also can be used for Ag nanoparticles synthesis.

SYNTHESIS, REACTIVITY AND BIOLOGICAL ACTIVITY OF TETRAZOLE DERIVATES

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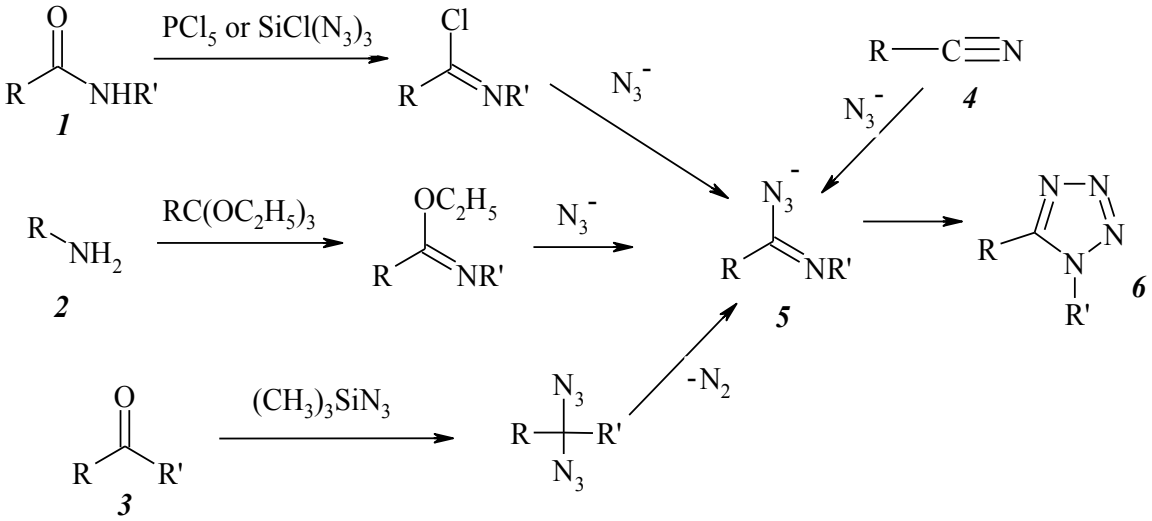
Introduction. In the last decade, the development of tetrazole chemistry has been associated with their use in medicine, pharmacy, and biochemistry. Over the years, original methods have been developed and significantly improved, for the preparation of substituted tetrazoles.

Aim. To study the reactions of synthesis and chemical properties of tetrazoles, biological activity and their use in medicine.

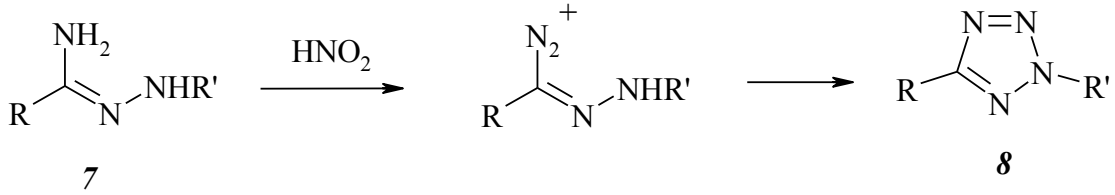
Material and methods. The variety of the information available over the internet and the data of the specialized text-books and periodicals were used within the framework of this work. The methods of the analysis the most valuable information selection and scientific induction method were applied for this study.

Results and discussions. The most common methods of obtaining substituted tetrazoles are interaction of N-alkylamides (1) with PCl_5 or $SiCl(N_3)_3$, reaction of primary amines (2) with

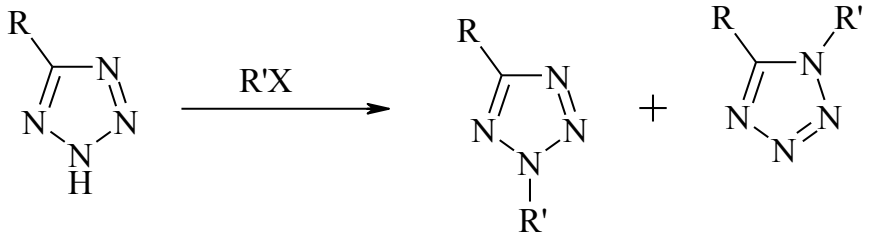
orthoesters.The reactions of aldehydes or ketones (3) with trimethylsilylazide are the example of synthesis methods.The interactions of azidic acid and its salts with nitriles (4) can be used too. A lot of the currently existing methods of synthesis of tetrazoles are reduced to the cyclization of imidaylazide (5). Inasmuch as nitrous-acid salts are thermally unstable It is proposed to use trimethylsilylazide $(CH_3)_3SiN_3$ instead of metal azides because it is more thermostable.



Nitrosation of amidrazones (7) followed byprocessing is an alternative method for the synthesis of tetrazoles (8).



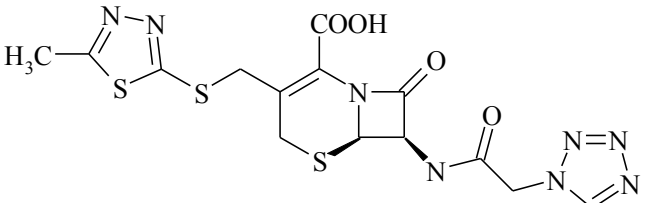
Tetrazoles are strong NH-acids and can dissociate to form aromatic tetrazolate anions. Tetrazoles have weak base properties. The tetrazole cycle is resistant to redox reagents. Tetrazoles are prone to electrophilic substitution, alkylation, acylation, phosphorylation. Acylation leads to ring opening and alkylation leads to the formation a mixture of isomers.



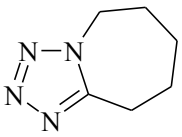
Halogenotetrazole can engage in nucleophilic substitution reactions. Despite the fact that tetrazoles are weak Bronsted bases, the nitrogen atoms of this heterocyclic system are capable of forming stable hydrogen bonds with proton donors. It determines the biological properties of the tetrazolyl fragment.

For medical chemistry, tetrazoles are promising for study because they have amphoteric properties, are mild transacylating agents, and take part in the formation of complexes with ions of various metals and radionuclides. In addition, they are stable and not as dangerous as azides in use.

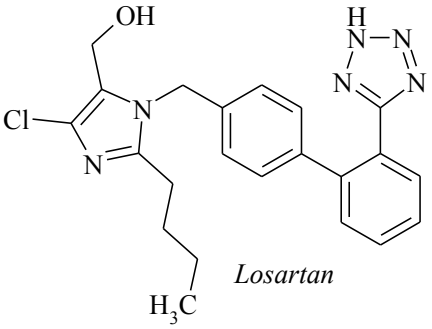
As pharmacophoric groups, tetrazoles are represented in molecules of active pharmaceutical ingredients by antimicrobial drugs (Cefazolin), analeptic drugs (Corazol), cardiovascular drugs (Losartan, Valsartan, Irbesartan, Candesartan), antihistamine drugs (H_1-histamine receptor blockers: Pemiroplast, Tazanoplast and Pranlukast), inhibitors of viral enzymes (HIV reverse transcriptase inhibitors; inhibitors of the RNA polymerase of the hepatitis C virus) and



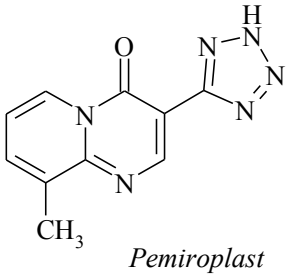
Cefazolin



Corazol



Losartan



Pemiroplast

Conclusions. The stability of tetrazoles in an organism, amphotericity, bioisosternity to natural functional groups, the ability to use tetrazoles in drug-design both as a skeleton of a molecule and as a terminal fragment allows tosynthesizelarge number of potential biologically active substances.

SYNTHESIS AND STUDY OF HYPOCHOLESTERINEMIC ACTIVITY OF 7-SUBSTITUTED 1-CHLOROBENZYL-8-(4,5-DIHYDRO-4-OXO-1,3-THIAZOLYL-2-) HYDRAZINEXANTHINES

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Introduction. Epidemiological, clinical, genetic, experimental and pathological studies have clearly established the main role of lipoproteins in atherogenesis. Lowering the plasma cholesterol concentration reduces the availability of atherogenic lipoproteins and the accumulation of cholesterol in the intima of arteries. Measures to reduce cholesterol in plasma have become the main in the practice of preventive cardiology and their use has significantly contributed to reducing mortality from coronary heart disease. Lowering the concentration of cholesterol in plasma by various means, including diet, pharmaceutical therapy, inhibits the progression of coronary plaques and facilitates their regression. Although significant regression is an unusual phenomenon, and the change in the size of the plaque during or after treatment is low, the frequency of clinical manifestations of coronary damage decreases. Coronary thrombosis is usually caused by damage to atherosclerotic plaques. Cracks occur mainly in areas where the thin filament layer overlaps the poorly structured matrix containing foam cells. Reduction in cholesterol concentration reduces the activity of macrophages and the accumulation of cholesterol and improves endothelial function and integrity, making atherosclerotic plaques more resistant to cracking. It is known that various derivatives of xanthine and adenine show a hypolipidemic effect.

Proceeding from the above, one can conclude that the problem of developing original domestic drugs of hypolipidemic action is perspective and relevant.

The aim of this work is to develop simple laboratory methods for the synthesis of 7-substituted 1-chlorobenzyl-8-(4,5-dihydro-4-oxo-1,3-thiazolyl-2-)hydrazinexantines in the literature and the study of their physical, chemical and biological properties.

Materials and methods of research. The melting temperature was determined by an open capillary method on the PTP-M device. Elemental analysis was performed on the Elementar Vario L cube device, the NMR spectra were taken on a Bruker SF-400 spectrometer (400 MHz operating frequency, DMSO solvent, TMS internal standard). Elemental data is in line with the calculated ones.