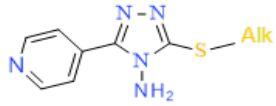

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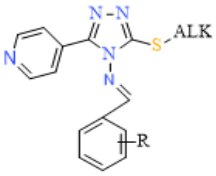

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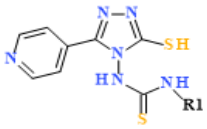

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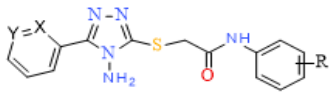

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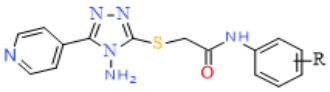

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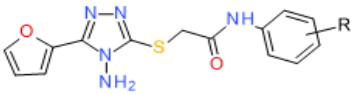

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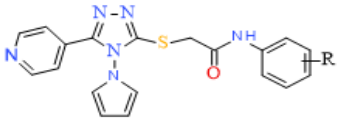

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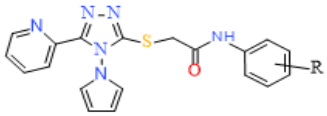
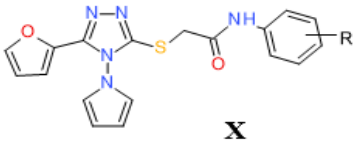


IX



X

Results and discussion. According to the data of the PASS computer program on line are promising compounds of V-X groups. The values of scoring functions for almost all compounds in complexes with the COX-2 enzyme exceed the values of these functions for aspirin and diclofenac sodium. For group **VI** the average values of scoring functions exceed the values for celecoxib. Based on these data it has been determined that 4-amino-5-(pyridine-4-yl)-1,2,4-triazole (4H)-3-yl-thioacetamides and their pyrrol derivatives are characterized by the highest level of affinity calculated to all targets studied compared with other groups of compounds.

Conclusion. In order to search for potential anti-inflammatory agents 1,2,4-triazol-3-thiones have been selected as promising objects of chemical modification. Based on the results of the PASS-prediction and molecular docking, six of the ten planned groups of compounds have been selected for the synthesis as promising selective COX-2 inhibitors.

METHODS OF ACIDS SYNTHESIS FROM BICYCLIC MONOTERPENES

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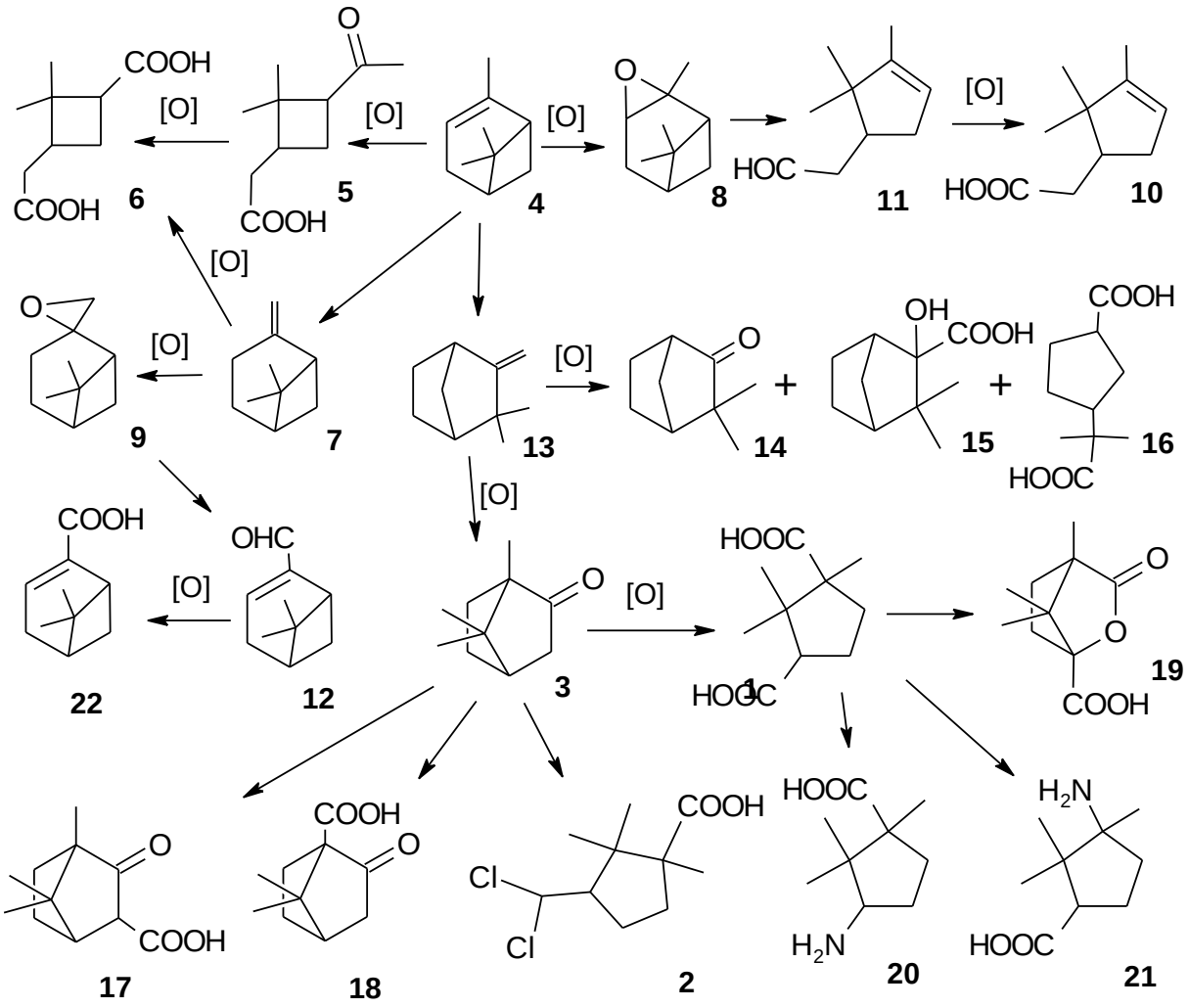
Introduction. In the previous studies we have synthesized a number of biologically active derivatives of camphoric and 3-dichloromethyl-1,2,2-trimethylcyclopentanecarboxylic acids (compounds **1** and **2**, correspondingly) with diuretic, hypoglycemic and anticonvulsant activities. Both acids were obtained by cleavage camphor **3** and used for introduction of the 1,2,2-trimethylcyclopentanecarboxylic acid moiety into the target molecules. Therefore, it would be of practical use to study other available sources of producing similar acids and to analyze alternative methods of camphor transformation.

Scheme



Aim. The aim of this work is to review the methods of synthesis of trimethyl-cyclopentanecarboxylic and similar acids from bicyclic monoterpenes.

Results and discussion. α-Pinene **4** is the main monoterpene of plant sources. It is widely used to obtain other compounds of the terpene class. Double bond oxidation of α-pinene **4** leads to the pinonic acid **5** and further to the pinic acid **6**. Oxidation of β-pinene **7** also produces the acid **6**.

The interesting intermediates are epoxides of α- and β-pinenes (compounds **8** and **9**). The epoxide **7** may be transformed into α-campholenic acid **10** through the corresponding aldehyde **11.** The formation of aldehyde **11** goes with the isomerization of carbon skeleton. The epoxide **9** transforms into myrtenal **12** in a presence of Lewis acid and then may be oxidized to the corresponding acid **22**.

Camphene **13** is synthesized from α-pinene **4**. The way of camphene oxidation depends on the oxidizing agent and the reaction conditions. The main products of these reactions are camphor **3**, as well as camphenilon **14**, camphenilic acid **15**, and camphenic acid **16**.

Synthetic methods of camphor transformation are the most developed. The camphoric acid **1**, camphorcarboxylic acid **17** and ketopinic acid **18** were synthesized from camphor **3**. Camphoric acid **1** can be transformed to camphanic acid **19** and amino acids **20** or **21**.

Conclusion. According to the proposed schemes, about ten acids may be used to enlarge a number of substances with a trimethylcyclopentane moiety.