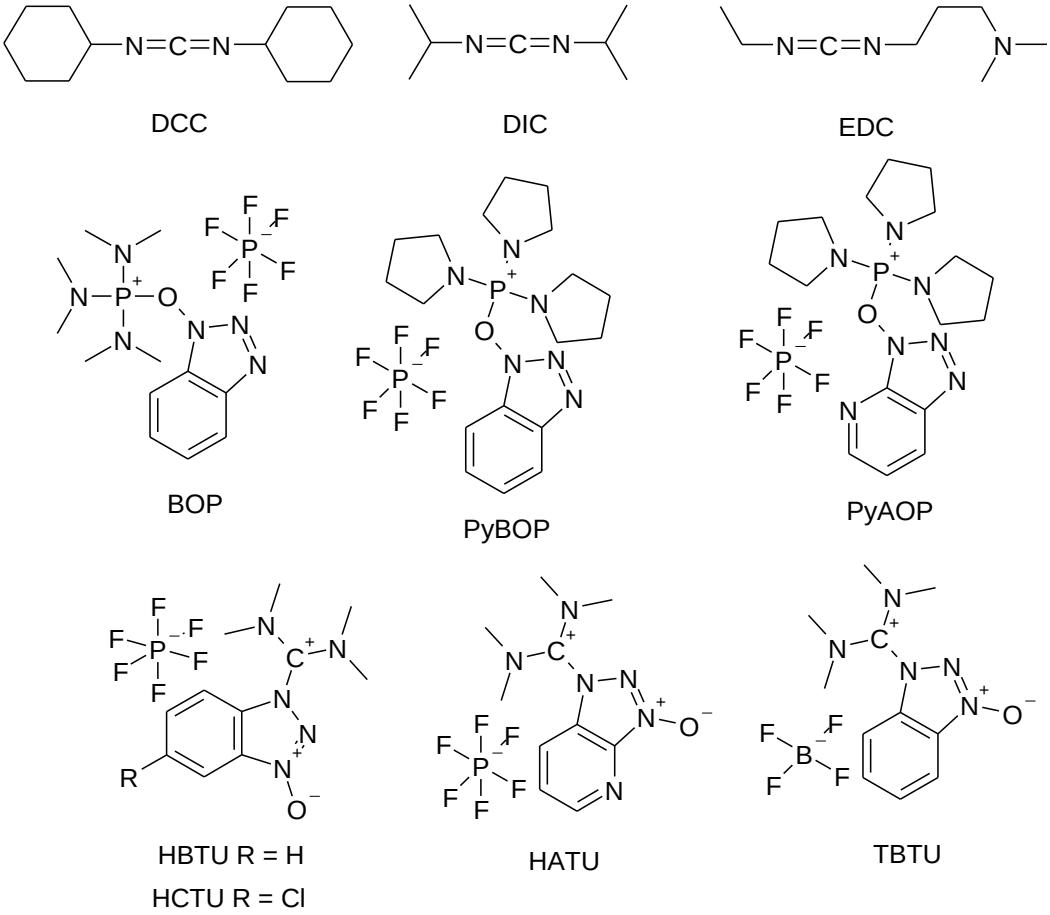
carbodiimides (DCC, DIC, EDC); 2) phosphorous compounds (BOP, PyBOP, PyAOP); 3) uronium compounds (HATU, HBTU, HCTU, TBTU), etc.



Conclusions. The discussed reagents are effective for acylation reactions in peptide synthesis and decrease racemization. Application of phosphorous compounds regardless their toxicity is rational for formation of peptide bonds because it is similar to biosynthetic process in the live cells and gives good selectivity of the process.

SYNTHESIS OF 2-AMINO-4-ARYL-3-CYANO-8-METHOXYCARBONYL-5-OXO-5,6,7,8-TETRAHYDRO-4*H*-CHROMENES BASED ON ESTERS OF 2-HYDROXY-4-OXO-6-ARYLCYCLOHEXENE-2-CARBOXYLIC ACID

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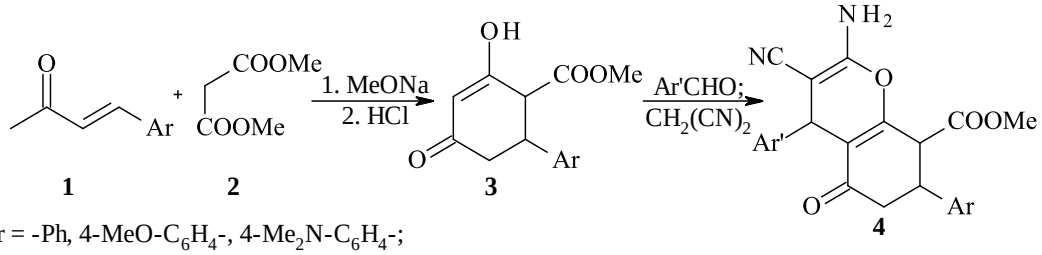
Introduction. Among chromene derivatives many compounds display a high level of different types of pharmacological activity (anti-inflammatory, antibacterial, anticoagulant, etc.) which causes the relevance of the synthesis of its new derivatives in order to find new biologically active substances.

Aim. Current research was aimed to synthesize esters of 2-hydroxy-4-oxo-6-arylcyclohexene-2-carboxylic acid by interaction of arylidene acetones with dimethyl malonate with further three-component interaction with aromatic aldehydes and malononitrile to obtaining new derivatives of 2-amino-4-aryl-3-cyanochromenes.

Materials and methods. Starting compounds and reagents: arylidene acetones, dimethyl malonate, aromatic aldehydes, malononitrile, triethylamine, ethanol. The methods of organic synthesis and IR-, ^{1}H, ^{13}C NMR spectroscopy, chromatography-mass spectrometry methods were applied in the course of the research.

Results and discussion. Interaction between arylidene acetones (1) and dimethyl malonate (2) proceeds in the presence of sodium methylate with refluxing in ethanol for 3 hours as domino transformation by the «Michael addition / Claisen condensation» type. As a result, methyl esters of 2-hydroxy-4-oxo-6-arylcyclohexene-2-carboxylic acid (3) were obtained.



1 **2** **3** **4**

Ar = -Ph, 4-MeO-C_6H_4-, 4-Me_2N-C_6H_4-;

Ar' = -Ph, 4-MeO-C_6H_4-, 2-MeO-C_6H_4-; 4-NO_2-C_6H_4-, 2-NO_2-C_6H_4-, 4-Me_2N-C_6H_4-.

By further three-component interaction of esters (3) with aromatic aldehydes and malononitrile in the presence of catalytic quantity of triethylamine in ethanol medium 2-amino-4-aryl-3-cyano-8-methoxycarbonyl-5-oxo-5,6,7,8-tetrahydro-4*H*-chromenes (4) were synthesized with good yields.

The structure of synthesized compounds was confirmed by IR-, ^1H, ^{13}C NMR spectroscopy and chromatography-mass spectrometry.

Conclusions. New 2-amino-4-aryl-3-cyano-8-methoxycarbonyl-5-oxo-5,6,7,8-tetrahydro-4*H*-chromenes were obtained. These investigations will be a base for further pharmacological researches.

JUSTUS VON LIEBIG: SCIENTIFIC LEGACY AND PRESENT DAYS

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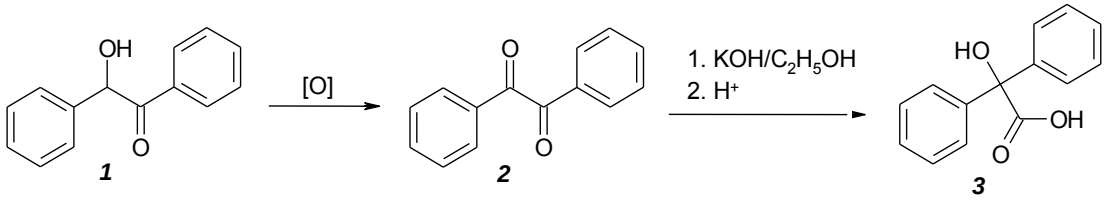
Introduction. Justus von Liebig was a famous German chemist. He have made a big contribution to chemistry, but one should pay attention exactly to benzoin condensation and benzilic acid rearrangement. These reactions were developed in the 1830s and retain their importance until now. In particular, benzylic acid is a starting compound in synthesis of variety of drugs, examples of which are *Clidinium*, *Dilantin*, and *Flutropium* acting as antagonists of the muscarinic acetylcholine receptors. Benzilic acid rearrangement is common for all 1,2-diketones and allows to modify the structure of steroids. During many years investigations in the field of transformations of benzylicd acid amides into lactam like heterocyclics have been the main scientific direction of organic chemistry department of Kharkiv Pharmaceutical Inatitute. These researches were being headed by prof. Petyunin P.O. Recently investigations of synthetic potential of benzylic acid have found their revival on organic chemistry department of National University of Pharmacy.

Aim. To analyse data regarding Justus von Liebig contribution to modern science. In particular our research was focused on the synthesis of benzylic acid, performed by Justus von Liebig in 1838. Carboxyl group modification within the molecule of benzylic acid leads to its functional derivatives which can be used for heterocyclization reactions.

Materials and methods. Starting compound and reagents: benzoin, nitric acid, benzil, ethanol, potassium hydroxide, benzilic acid, a standard methods of organic synthesis.

Results and discussion. Benzyl 2 was obtained from commercially available benzoin 1 by oxidation. We prepared benzylic acid 3 by heating the mixture of benzyl 2, ethanol and potassium hydroxide (rearrangement reaction).



1 ***2*** ***3***