



**XXIII INTERNATIONAL SYMPOSIUM
„ADVANCES IN THE CHEMISTRY OF
HETEROORGANIC COMPOUNDS”**

**Jan Długosz University
in Częstochowa**

**Centre of Molecular
and Macromolecular Studies
Polish Academy of Sciences**

**Section
of Heteroorganic Chemistry
Polish Chemical Society**

**ŁÓDŹ
October 28, 2022**

XXIII International Symposium
„Advances in the Chemistry
of Heteroorganic Compounds”

ORGANIZED BY

Jan Dlugosz University in Czestochowa

Centre of Molecular and Macromolecular Studies
Polish Academy of Sciences

Section of Heteroorganic Chemistry
of the Polish Chemical Society

in cooperation with

Faculty of Chemistry, University of Łódź

ŁÓDŹ, October 28, 2022

The third symposium under the Project:
“Doskonała Nauka” – “Klaster 3 międzynarodowych sympozjów”
(DNK/SP/514249/2021; 2022-02-11)
Ministry of Education and Sciences
POLAND

As a satellite scientific meeting,
the 14th International Mini-Symposium
„Current Problems of Organic Chemistry”
was held at the Faculty of Chemistry, University of Lodz on October 27, 2022.
Along with two lecture sessions, posters session with presentation of selected
communications was organized as well.

Printed by:

Wydawnictwo Naukowe Uniwersytetu Humanistyczno-Przyrodniczego im. Jana Długosza
w Częstochowie

ISBN: 978-83-66536-73-9

978-83-66536-72-2 (electronic version)

The Symposium Materials were edited by:

Tomasz Cierpień

Józef Drabowicz

Piotr Kielbasiński

<http://achhc.cbmm.lodz.pl/>

Synthesis of homoisoflavonoids with a coumarin moiety and coumarin-pyrazole or coumarin-isoxazole hybrids based on them

Nataliia V. Myshko¹, Galyna P. Mrug¹, Svitlana P. Bondarenko², Mykhaylo S. Frasinuk¹

¹V. P. Kukhar Institute of Bioorganic Chemistry and Petrochemistry, NAS of Ukraine, Kyiv 02094, Ukraine

²National University of Food Technologies, Kyiv 01601, Ukraine

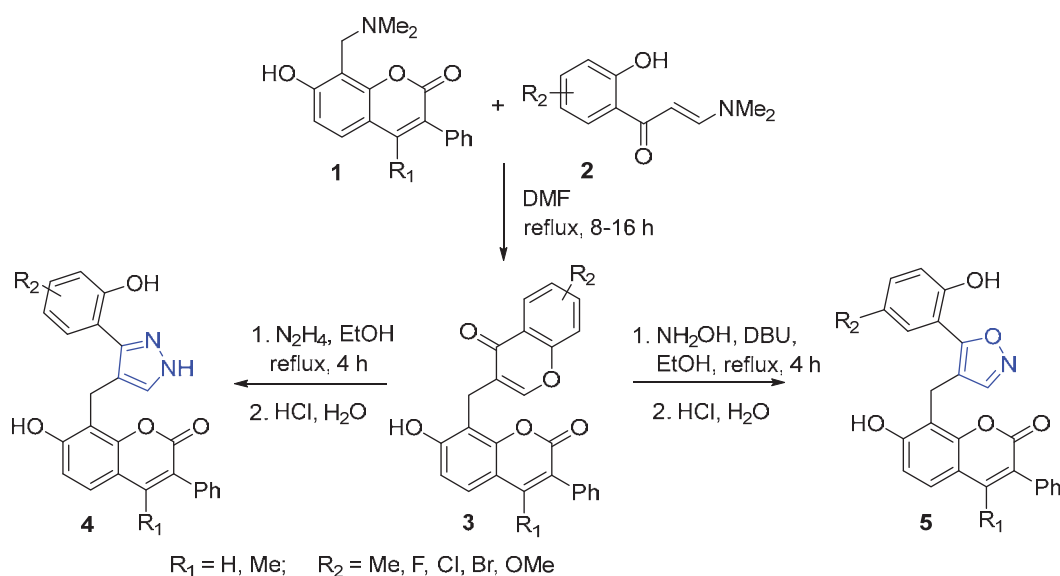
e-mail: nataliamyshko2802@gmail.com

Homoisoflavonoids represent rarely distributed class of flavonoids bearing extra carbon atom in flavonoid skeleton. Homoisoflavonoids might have a large potential for further investigations of their bioactivities in order to identify important leads [1].

Previously we reported an efficient one-pot method of the synthesis of B-ring hydroxylated homoisoflavonoids that does not require the protection of the phenolic groups [2].

In this research in the *oxa*-Diels–Alder reaction of thermally generated *ortho*-quinone methides from 3-aryl-8-(*N,N*-dimethylaminomethyl)coumarins **1** with (*2E*)-3-(*N,N*-dimethylamino)-1-(2-hydroxyphenyl)prop-2-en-1-ones **2** and the subsequent cascade of reactions were obtained 8-[4-oxo-4*H*-chromen-3-yl)methyl]-7-hydroxy-3-phenyl-2*H*-chromen-2-ones **3**.

Synthesis of pyrazole–3-arylcoumarin hybrids **4** was performed by recyclization of chromone core of compounds **3** under hydrazine actions. Target isoxazoles **5** were synthesized by the reaction of homoisoflavonoids with hydroxylamine hydrochloride under reflux in ethanol in presence of DBU.



Scheme 1. Synthesis of homoisoflavonoids and coumarin-pyrazole or coumarin-isoxazole hybrids based on them.

In summary, we developed an efficient synthesis of homoisoflavonoids with a coumarin moiety and coumarin-pyrazole or coumarin-isoxazole hybrids based on them.

References

- [1] L-G. Lin et al., *Planta Med.* **2014**, *80*, 1053–1066.
 [2] G. P. Mrug et al., *J. Org. Chem.*, **2019**, *84*, 7138–7147.