

STATEMENT

from Assoc. Prof. Kalina Ivanova Alipieva, PhD
Institute of Organic Chemistry with Centre of Phytochemistry, BAS
Member of the Scientific Jury according to order № RD-09-51/15.04.2022 of the Director of
IOCCP-BAS

Subject: PhD thesis for educational and scientific degree "Doctor", in the field of higher education "Natural Sciences, Mathematics and Informatics", professional field 4.2."Chemical Sciences", scientific specialty "Bioorganic chemistry, chemistry of natural and physiologically active compounds“

PhD Candidate: Viktoriya Svetlinova Ivanova

Topic: “Phytochemical characterization of species genus *Inula* in Bulgaria”

Supervisors: Prof. Antoaneta Trendafilova, PhD
Assoc. Prof. Milka Todorova, PhD

General presentation of the candidate

The PhD student Viktoriya Ivanova presented a PhD thesis, abstract and the set of documents that meet the requirements for acquiring the education and scientific degree **Doctor** in accordance with the Act on Development of the Academic Staff in the Republic of Bulgaria, the Regulations under it as well the regulations for acquiring scientific degrees and holding academic positions at BAS and IOCCP-BAS. Ms. Ivanova graduated from UCTM - Sofia: Bachelor's degree in Biotechnology in 2013 and Master's degree in Fine Organic Synthesis in 2016. Since 2013, she has participated in a significant number of scientific projects funded by Bulgarian and international sources.

Timeliness of the research topic

The PhD thesis covers a detailed phytochemical study of three species of the genus *Inula* of Bulgarian origin. The wide application of the representatives of the genus in folk medicine, the small number of species studied in detail regarding their chemical composition, as well as the

growing interest of official medicine and pharmacy in natural sources of new therapeutic agents undoubtedly define the topic as very relevant. The aims and objectives of the study are clearly formulated, and the number of summarized literature and experimental data is significant.

Main results and contributions of the PhD Thesis

The Chapter “Literature Review” includes data on the main classes of secondary metabolites, specific to the genus and specifically to the studied species in detail. The methods for their extraction and isolation, as well as their structural characterization are also included and data on their biological activity are summarized. A large number of literature sources are cited.

The results obtained are fundamental and scientifically applied.

- For the first time the phytochemical composition of the three *Inula* species from Bulgarian origin was studied in detail and the main terpene and phenolic compounds in the studied taxa have been identified.
- Nine new natural substances are structurally characterized, which is a significant contribution to the constantly enriching database of natural compounds.
- The accumulated information about the sesquiterpene composition of the studied species, the similarities and differences in the composition of terpenoid and phenolic compounds is valuable not only in terms of their therapeutic potential, but also from a chemotaxonomic point of view.
- Comparative analyzes of target components in a large number of populations of *I. britannica* identify the most promising populations of the species as a source of valuable biologically active substances.

Assessment of publications and the candidate's personal contribution

The results on the topic of the PhD Thesis are summarized in six scientific publications, divided into quartiles, as follows: **Q1** - 1, **Q2** - 3 and **Q4** - 2. Data cover these results were presented at five international scientific forums. There are 16 citations on this topic. The personal contribution of PhD student Victoriya Ivanova to the results of the thesis is indisputable. My personal impressions of the doctoral student are that she is a responsible and correct young scientist, a precise experimenter with very good adaptability when working in a team.

Critical remarks

I have no critical remarks on the substance of the PhD Thesis. In my opinion, in the chapter "Literary Review" the general characteristics of the main classes of secondary metabolites should be presented before the data for those contained in the genus *Inula*, but this is the author's view and does not reduce the quality of the dissertation.

CONCLUSION

The PhD Thesis contains original scientific and applied results that have a significant contribution in the field of phytochemistry and fully meet the requirements of the Academic Staff Development Act in the Republic of Bulgaria and the Regulations for its implementation. The presented materials and dissertation results fully comply with the specific requirements of the Regulations of IOCCP-BAS for implementation of this Act.

Due to all the above, I confidently give my positive assessment of the dissertation presented and the results and contributions summarized in it and in the abstract, and I recommend the esteemed scientific jury to award PhD student Victoriya Ivanova educational and scientific degree 'Doctor' in professional field 4.2. "Chemical Sciences", scientific specialty "Bioorganic chemistry, chemistry of natural and physiologically active compounds".

June 22, 2022

Reviewer:

(Assoc. Prof. Kalina Alipieva, PhD)