OPINION

on a dissertation

for awarding the scientific degree **Doctor of Sciences**

professional field: 4.2 "Chemical Sciences", scientific specialty "Organic chemistry"

Author: **Georgi Milchev Dobrikov**, associate professor

at the Institute of Organic Chemistry with Center for Phytochemistry, BAS

***Topic*: "New compounds as perspective antitubercular and antiviral agents"**

Jury member: **Prof. Dr. Yulian Dimitrov Zagranyarski**,

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The current dissertation examines two main research areas – development of new compounds with antituberculosis activity and development of new compounds with antiviral activity. Special emphasis is placed on anti-tuberculosis agents. In addition to a brief description of the synthetic methods, results for the in vitro/in vivo activity of the synthesized compounds are included. The dissertation is written in English and is structured very well, being presented in 175 pages, which include 34 figures, 28 tables and 29 diagrams. 340 literary sources are cited. The author has included research that has been published in 17 articles in prestigious specialized journals with a high impact factor, and the total number of citations to the works according to SCOPUS is over 300.

The dissertation is undoubtedly the personal work of the dissertant. Dr. Dobrikov is the first author or corresponding author in 60% of the publications included in the dissertation; the results have been presented at a number of international scientific forums and have been widely reflected in the scientific literature. The published works have been repeatedly cited by specialists in renowned scientific journals.

The synthesis of several large series of new compounds has been described, with a total number of over 300!

The abstract is written on 77 pages and follows the structure of the dissertation, without the literature review and the experimental part. A version in English is also presented, according to legal requirements. The abstract faithfully reflects the main scientific results described in the dissertation and the conclusions drawn.

The main scientific contributions of the dissertation work are as follows:

• A new subclass of analogs of the classic antituberculosis drug ethambutol has been synthesized. Some of these analogs demonstrate higher activity and lower cytotoxicity than ethambutol;

• A new class of antituberculosis compounds with a fenchene skeleton has been synthesized;

• A new class of antituberculosis compounds with a camphene skeleton has been synthesized, showing high antituberculosis and antibacterial activity;

• New nitrofuranoyl compounds were synthesized and their possible mechanism of high antituberculosis activity was investigated using in vitro induced mutagenesis;

• Various new analogues of the known diaryl ether MDL-860 have been synthesized. Many of them demonstrate better activity against 6 viruses. The mechanism of action of MDL-860 has been established;

• A large number of promising bioactive compounds (so-called "hit compounds") have been discovered among the above groups. They are suitable for further drug development in the next preclinical phases.

IN CONCLUSION, I consider that the presented dissertation work fully meets the definitions and criteria set in the Law for the development of the academic staff in Bulgaria. All accompanying scientific achievements cover and strongly exceed the legal minimum requirements, as well as the recommended requirements of the IOCCP-BAS. There is no evidence of plagiarism.

I strongly recommend to the Honorable Scientific Jury to award Assoc. Dr. Georgi Milchev Dobrikov the scientific degree "Doctor of Sciences" in professional field 4.2 Chemical Sciences (Organic Chemistry).

25/09/2023 Signature:

/Assoc. prof. Dr. Yulian Zagranyarski/