

OPINION

by Prof. George Tzvetanov Tzvetkov - Faculty of Chemistry and Pharmacy, SU "St. Kl.
Ohridski"

by procedure for the defense of Marieta Dimitrova Belcheva dissertation

By order No. I-108/31.07.2024 of the Director of the Institute of Microbiology "Stefan Angelov" - BAS, I have been selected as a member of a scientific jury for conducting a procedure for the defense of the dissertation work of Marieta Dimitrova Belcheva "New photosensitizers and carbon composites as agents with antimicrobial action', scientific supervisors Prof. Dr. Lyudmila Kabaivanova from IMicB-BAS and Prof. Dr. Boyko Tsyntsarski, OrgCHM-BAS.

Marieta Belcheva obtained master's degrees in chemistry and physics (2001, SU) and medicine (2001, MU). Without interruption, the doctoral student devotes herself to teaching, laboratory-diagnostic and scientific research activities, initially at MU-Sofia, then at DKC Sofiamed, and from 2021 she is successively a specialist and assistant at IMicB-BAS. In the period from 2005 to 2024, he specialized for different periods of time in medical centers in Switzerland, the Netherlands and Germany. Part of the results presented in the dissertation were obtained precisely during these specializations. The dissertation itself covers 148 pages, contains 56 figures and 4 tables. The bibliographic reference includes 304 literary sources. It is noted that the presented work was discussed and directed for defense at a meeting of the National Scientific Seminar on "Applied Microbiology and Microbial Biotechnologies" on 16.07.2024 at the Stefan "Angelov" Institute of Microbiology - BAS. Along with the dissertation an abstract is attached that accurately and faithfully reflects the research conducted and the relevant results and conclusions.

From the introduction of the dissertation, the two main goals of the conducted research become clear, namely: (i) study of the effect of photodynamic inactivation of new metal-containing phthalocyanine photosensitizers against some of the most common microorganisms *Staphylococcus aureus*, *Enterococcus faecalis*, *Candida albicans*, *Aggregatibacter actinomycetemcomitans*, *Porphyromonas gingivalis* and *Prevotella intermedia*, and (ii) inactivation of clinically relevant microorganisms by novel metal-carbon composites. The research described and analyzed in the dissertation is entirely experimental in nature. Moreover, they are entirely within the professional direction (4.3. Natural Sciences) and, accordingly, the scientific specialty ("Microbiology").

The volume and quality of the research carried out, as well as the significance of the main conclusions, convince me that the presented dissertation work "New photosensitizers and carbon composites as agents with antimicrobial action" is fully in line with ZRASRB. It is clear from the presented documents that Assistant Professor Belcheva is a co-author of three scientific publications containing parts of the research in the dissertation, two of the journals being present in SCOPUS and WoS.

The analysis of the documents presented by Assistant Professor Belcheva shows that the dissertation meets the normative requirements for the acquisition of the educational and scientific degree "doctor". It is to be expected that the future efforts of Assistant Professor Belcheva will be fruitful and useful. I have no critical comments on the presented documents.

Conclusion

I believe that the presented dissertation has successfully fulfilled its scientific and educational task, which is why I allow myself to recommend to the esteemed members of the scientific jury that Marieta Dimitrova Belcheva be awarded the educational and scientific degree "Doctor" in professional direction 4.2 Natural Sciences (Microbiology).

20.09.2024, Sofia

Prepared by:

Prof. Dr. G. Tzvetkov