STANOVISHE

by Assoc. Dr. Adriana Georgieva Guscherova
Department of Biotechnology, Bioremediation and Biofuels Laboratory,
"Stefan Angelov" Institute of Microbiology, BAS

Subject: Angeliki Konstantinidou's dissertation for awarding the educational and scientific degree "Doctor" in professional field 4.3. Natural sciences, scientific specialty Biochemistry on the topic: "Optimization of the production of biologically active substances from bacteria and algae and evaluation of their potential action as antitumor agents in in vitro experiments"

Scientific consultants: Prof. Dr. Svetlozara Petkova and Assoc. Dr. Ludmila Kabaivanova appointed by order No. RD-15-121/ 19.07.2022 of the Director of IEMPAM-BANS, for the defense of a dissertation presented by Angeliki Nikolaos Konstantinidou, a free doctoral student at IEMPAM-BAS to obtain an educational and scientific degree "doctor".

The doctoral student Angeliki Konstantinidou has submitted for the defense procedure all the necessary materials, references and documents according to the requirements of the Academic Staff and the Regulations for the terms and conditions for acquiring scientific degrees and for holding academic positions. in confirmation of readiness for protection.

The dissertation is written on 95 pages. Its layout is very well balanced in terms of volume of individual sections: introduction, literature review, aim and tasks, materials and methods, results, conclusions and contributions. They are filled with specific content, respecting the ratio of individual parts in such a scientific work.

The results are presented logically and clearly in 45 figures. The bibliographic reference includes 124 sources.

The abstract is written on 56 pages.

It impresses with its firmness and purposefulness. It reflects a sufficient number of citations from publications that are directly relevant to the tasks set in the dissertation work.

The purpose of the dissertation work is well formulated and the tasks to be performed are clearly Search for new natural substances of bacterial and algal origin, optimization of their production and testing of the obtained biologically active substances as potential agents having an antitumor effect on certain types of cancer cells. As a result of the work on the dissertation, 13 conclusions and 7 contributions were formulated.

Bacterial producers of glycolipid biosurfactants - Pseudomonas aeruginosa and Rhodococcus wratislavensis - were selected.

Optimizing the conditions for growth and development of the selected bacterial and algal strains and increasing the production of biologically active substances with potential anti-tumor action was achieved. Immobilization of the cells of the selected strains and selection of the most effective was performed. A decrease in the survival of the tested two cancer cell lines was demonstrated after applying different concentrations of the synthesized bacterial product, most pronounced on the highly metastatic

cell line - MDA-MB 231, with an insignificant decrease in the effect on the normal cell line - MCF-10A.outlined:

Algal producers of exoheteropolysaccharides - red microalgae - Porphyridium cruentum and Rhodella reticulata were selected.

Polysaccharides have pharmacological effects in the treatment of tumor cells - without side effects and are therefore one of the alternatives for the treatment of cancer diseases instead of traditional chemotherapy. The use of natural bacterial and algal products is a useful remedy because of their few or no side effects. From the review of the experimental techniques, it can be concluded that in the process of her studies the doctoral student acquired the qualities of a qualified researcher. A wide range of classical and modern molecular biological methods have been mastered and applied. It is obvious that the PhD student has sufficient molecular biology knowledge and the methods used are detailed and explained. The applied methods correspond to the set goals and tasks. The discussion is developed adequately to the obtained results and is in accordance with the literary data from the used bibliography.

13 conclusions and 7 contributions were derived and precisely formulated, which reflect the results and fully meet the set tasks. I agree with the author's assessment of the developed contribution of the dissertation work.

In connection with the dissertation, the doctoral student has presented 2 publications, in journals with an impact factor, referenced in the Web of Science database. One article is in print. In one of the articles Angeliki Konstantinidou is the second author, in the other the third author.

The presented scientific works fully cover the subject of the dissertation work and contain the results of the conducted research. For the period of the development of the dissertation, the doctoral student completed the required set of courses during the doctoral studies. She successfully passed an exam in language training, computer skills and a basic specialized subject. According to the requirements of the Regulations for the activity of the Central Bank, the BAS has collected a total of 253 credits. The dissertation work "Optimization of the production of biologically active substances from bacteria and algae and evaluation of their potential action as antitumor agents in in vitro experiments" is dedicated to an important medical problem and represents an in-depth study with scientific value and practical application. When discussing the results, the high professional maturity and scientific competence of the doctoral student are impressive. The work establishes the author as a responsible and reliable researcher who can independently conduct research at a high scientific level and interpret complex scientific results. In conclusion, I would like to emphasize that it was a great professional pleasure to draft an opinion on Angeliki Constantinidou's dissertation

Conclusion:

The dissertation shows that the doctoral student Angeliki Konstantinidou is a well-rounded scientist who knows modern methods of interpreting the obtained results and fully meets the requirements for obtaining the educational and scientific degree "Doctor". This gives me reasons to recommend and confidently suggest to the esteemed jury to vote for awarding her "Doctor" in professional direction 4.3. Natural sciences, scientific specialty Biochemistry.

11.08.2022

Prepared the opinion:

Date Assoc. Dr. Adriana Guscherova