TO THE MEMBERS OF THE SCIENTIFIC JURY
for the defense of the dissertation of Prof**. Ivayla Nedyalkova Pancheva-Kadreva** - Faculty of Chemistry and Pharmacy, Sofia University "St. Kl. Ohridski"

O P I N I O N

by Prof. Dr. Ognyan Ivanov Petrov

Sofia University "St. Kl. Ohridski",
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Regarding the thesis for the acquisition of the scientific degree "Doctor of Sciences" in professional direction 4.2 Chemical sciences and scientific specialty "Analytical chemistry", on the topic "Metal complexes of the carboxylic polyethers monensin and salinomycin: structure, properties and biological activity"

I. General presentation of the procedure and the doctoral candidate

The presented set of materials on an electronic medium is in accordance with the Law, the regulations for its implementation and the recommended criteria of the Faculty of Chemistry and Pharmacy, regarding the procedure for awarding the scientific degree "Doctor of Sciences".

The candidate has attached a thesis, an abstract in Bulgarian and English, a list of publications and a certificate of compliance with the national minimum requirements. In addition, a plagiarism report is attached, the analysis of which shows that the percentages do not exceed the permissible ones.

For participation in the procedure, 27 scientific papers in full text are submitted, of which 21 articles in refereed and indexed journals and 4 chapters of collective monographs. The publications have not been used to acquire a PhD thesis. A total of 204 independent citations were found on the publications related to the dissertation work (122 of them in the Scopus database). 63 citations were submitted for participation in the present procedure.

Brief biographical data

In 1992, Ivayla Pancheva graduated from the Faculty of Chemistry and Pharmacy of SU "St. Kl. Ohridski", with Master's degree in inorganic and analytical chemistry. In 2001, she defended a Doctor of Philosophy (PhD) thesis. In the period 2011-2020, she held the position of Associate Professor ("Docent"), and from 2020 until now she holds the position of "Professor". From 2011 to 2019, she was the deputy dean of the Faculty of Chemistry and Pharmacy of SU "St.

Kl. Ohridski". She has specialized in Japan, Hungary, and Spain, and has traveled on many shorter visits to foreign universities.

II. Relevance of the topic, knowledge of the problem and appropriateness of the set goals and tasks

Prof. Pancheva's thesis is dedicated to current scientific and practical problems related to the fight against infectious diseases and drug resistance, applying interdisciplinary approaches. The main emphasis is on the design of new chemotherapeutics active against pathogenic microorganisms, including those resistant to the current arsenal of drugs.

The main goal of the presented dissertation work is to clarify the specificity of the complex-forming processes of the polyether ionophore antibiotics monensin and salinomycin, and study the structure and properties of the obtained complexes. The set tasks are clearly formulated and can be summarized as follows: 1) preparation, isolation and structural characterization of coordination compounds with metal ions in different oxidation states; 2) study of the "metal ion - ionophore" systems in solution; 3) evaluation of the biological properties of the complexes and comparison of the data with those of the uncoordinated ligands.

III. Characterization and evaluation of the thesis

The thesis is structured in a standard way and includes an introduction, literature review, objectives, materials and methods, results and discussion, conclusions, contributions, cited literature and appendices. It is written on 155 pages, of which 41 pages are appendices. It is illustrated with 31 tables and 59 figures. The list of references includes 178 sources.

The literature review includes a general description of polyether ionophore antibiotics. Special attention is given to the antibiotics monensin and salinomycin as monovalent polyether ionophores, their application and their chemical modifications.

The Materials and Methods section details the reagents, consumables, microorganisms, and cell cultures for the chemical and biological experimental procedures. Information is given on the vast array of instrumental methods and apparatus used for structural research.

It makes a good impression that the abstract is presented in full correspondence with the thesis. It is precisely crafted and summarizes very well the research conducted and the results obtained.

I highly appreciate the results achieved by Prof. Pancheva, described in the thesis. 32 new neutral "classical" and 7 "non-classical" complexes of the natural polyether ionophores monensin and salinomycin were isolated and structurally characterized. The ability of monensin and salinomycin to complex in solution was investigated using circular dichroism and theoretical models. It has been investigated how the inclusion of a metal ion in the composition of coordination

compounds affects the biological activity and promising data for their application have been obtained.

IV. Conclusion

The thesis presented by Prof. Dr. Ivayla Pancheva and the related publications fully meet the requirements of the Law and the Regulations for its application in terms of volume, quality and achieved scientific contributions. The report on the works of Prof. Pancheva for compliance with the national minimum requirements for obtaining the Doctor of Science degree shows that she exceeds the indicators in group G and D, as defined in the Recommended Criteria of the SU for professional direction 4.2., "Chemical Sciences".

Based on the above, I confidently give my positive assessment of the conducted research presented in the thesis. I propose to the Honorable Scientific Jury to award the scientific degree "Doctor of Sciences" to Prof. Dr. Ivayla Nedyalkova Pancheva-Kadreva in the field of higher education 4, "Natural Sciences", Professional Direction 4.2., "Chemical Sciences", and Scientific Specialty "Analytical Chemistry".

Ognyan Petrov

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Sofia Prof. Ognyan Petrov