

SCIENTIFIC OPINION

From

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Member of the scientific jury on the basis of order R-109-120 / 21.03.2022 of the Rector of the Medical University-Varna and appointed for preparation of an opinion according to protocol 1/22.03.2022.

SUBJECT: Public defense of the dissertation of Sonya Yordanova Ivanova for obtaining the educational and scientific degree "Doctor" in the field of higher education 7. Health and Sports, 7.3. Pharmacy and doctoral program "Pharmaceutical Chemistry" with the topic of the dissertation: "New strategies for qualitative and quantitative analysis of nitrofurals and its new derivatives." Scientific supervisor of the dissertation is: Assoc. Prof. Svetlana Fotkova Georgieva, Ph.D.

For the preparation of my opinion I was given an abstract of the dissertation. It is 55 pages long and covers the following chapters: I. Introduction (1 page), II. Theoretical part (17 pages), III. Aim and tasks (1 page), IV Experimental part (missing; it is stated that the materials and methods used are in the presented publications, V. Results and discussion (26 pages), VI. Conclusions (1 page), VII. Contributions (1 page), VIII List of publications in connection with the dissertation (1 page) and IX Used literature (4 pages). It should be noted that in the Theoretical part there is a figure, a scheme and a text in English. I think that this is not right, despite the fact that they are excerpts from certain documents, they could easily be translated into Bulgarian and the source of information to be indicated.

Relevance of the dissertation

Nitrofurans are of interest to science due to their broad antimicrobial spectrum covering bacteria, protozoa, fungi and parasites. On the other hand, the problem of polymorphism also covers current topics as the individual polymorphic forms of the compounds have different pharmacokinetic and pharmacodynamic behavior. So, from this point of view, I think that the topic under consideration is relevant.

Purpose, tasks and materials and methods used

There are three goals in the dissertation:

- To study, mainly with the help of an infrared spectrometer, the polymorphic features of the pharmacopoeial representative Nitrofurantoin and to analyze the possibilities for simultaneous growth of several of its As₂Se₃ polymorphs.
- To explore the possibilities for the introduction of new and specific qualitative reactions in the identificational Nitrofurantoin analysis.
- To synthesize new Nitrofurantoin derivatives with the precursor Nitrofurantoin itself.

The three goals set could easily be summarized in one goal, as presented this way they sound like tasks. The main tasks that the author has set are nine. In the experimental part of the abstract given to me, the materials and methods used are not indicated. It is written that information about them can be found in the presented publications related to the dissertation. My opinion is that the basic methods in an abbreviated version should be included in the abstract so that reviewers can get acquainted with them.

Results, discussion, conclusions and contributions

The results and the discussion are well illustrated. Various polymorphic forms of Nitrofurantoin have been synthesized and analyzed. The metastability of the resulting γ -Nitrofurantoin polymorph was determined. Qualitative reactions were performed to demonstrate Nitrofurantoin with Gibbs reagent. Nitrofurantoin derivatives were synthesized and analyzed, and their antibacterial activity against *S. aureus* and *E. coli* was determined.

Finally, data on the photo- and cytotoxicity of Nitrofurural, Nitrofurantoin and Nifuroxazide on BALB / 3T3 mouse cell line are presented. The conclusions are logical based on the results obtained. Ideas for future actions are added supplementary to the current study. Five contributions were made without specifying whether they were of original scientific, scientific-applied or confirmatory nature.

Publishing activity

The dissertation has presented four publications in connection with the dissertation, one of which is in an international journal with IF 3.196, which covers the requirements for acquiring PhD.

Conclusion

The dissertation covers a current topic and meets the necessary criteria. It fully complies with the Law on the Development of the Academic Staff in the Republic of Bulgaria, both the Regulations for its implementation and the PRAS of MU-Varna for the acquisition of "PhD". Based on this, I give a POSITIVE EVALUATION and suggest the esteemed members of the Scientific Jury to vote for the award of the educational and scientific degree "Doctor" in the field of higher education. 7. Health and sports, professional field 7.3. Pharmacy and scientific specialty "Pharmaceutical Chemistry" to Sonya Yordanova Ivanova.

Varna

10.06.2022

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