

STATEMENT OF OPINION

by **Assoc. Prof Kalin Valentinov Ivanov, PhD**

Head of Department of Pharmacognosy and Pharmaceutical Chemistry
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on dissertation work for awarding the educational and scientific degree "Doctor"
professional field 7.3 Pharmacy
higher education field of 7. Healthcare and Sport
doctoral program Pharmaceutical chemistry

Author: Sonya Yordanova Ivanova,

Department of Pharmaceutical Chemistry, Faculty of Pharmacy. Medical University – Varna

Form of dissertation: Regular form of education

Department: Pharmaceutical Chemistry

Thesis: "New strategies for qualitative and quantitative analysis of Nitrofurantoin and its new derivatives."

Scientific supervisor: Assoc. Prof. Dr. Svetlana Fotkova Georgieva, MScBiotech, PhD, Department of Pharmaceutical Chemistry, Faculty of Pharmacy. Medical University – Varna.

1. General introduction of the procedure and the doctoral student

The presented materials on paper and electronic carrier completely correspond to the Regulations for Academic Development in the Medical University - Varna, **Art. 69** and include the following documents:

- Order for checking off with the right of defence - P-109-120/ 21.03.2022;
- A dissertation work in 1 paper copy and 1 electronic copy in PDP format;
- A summary of dissertation in Bulgarian and English in paper and electronic PDF carrier;
- A curriculum vitae in European format signed by the doctoral student;
- A list of publications and research papers related to the dissertation topic;
- Copies of the publications and research papers related to the dissertation topic;
- A list of participations in scientific forums;
- A list of registered citations;
- A record for passed exam of the doctoral minimum;
- A copy notarially attested higher education diploma;

- A declaration for originality and reliability of the applied documents;
- A certificate for credits received from the common curriculum of the Doctoral School of Medical University of Varna;
- Other documents related to the procedure.

The presented dissertation is written on 110 pages. It is structured according to the standard model including Introduction, Theoretical review, Aim and tasks, Experiments, Results and discussion, Conclusions, Contributions, References, and Appendixes. It is illustrated with 6 tables, 88 figures and 3 appendixes. Sonya Yordanova Ivanova has included 4 scientific publications (1 with IF).

2. Relevance of the subject

The topic of the project-dissertation is up-to-date. It is related to the development of approaches to qualitative and quantitative analysis of Nitrofural and the synthesis of its new derivatives.

3. Problem analysis

In forming the *Theoretical review*, it is noteworthy that Nadya Hadzhieva used 240 literary sources. The in-depth and detailed knowledge of the scientific problem is evident both from the detailed and well-structured literature review, and from the analysis of the presented facts and the conclusions made. The *aim* is well-defined:

- To study, with the help of an infrared spectrometer, the polymorphic features of Nitrofural and to analyse the possibilities for the simultaneous growth of several of its polymorphs;
- To explore the possibilities for the introduction of new and specific qualitative reactions in the identification Nitrofural analysis;
- To synthesise new Nitrofural derivatives, with the precursor Nitrofural itself.

The set nine tasks correspond to the goal and realise its implementation.

4. Evaluation of the research publications and personal participation of the doctoral student in the dissertation

Sonya Ivanova is the first author in the attached 1 of 3 *scientific publications* on the topic of the dissertation. The total number of points of the doctoral student by group of indicators D is 47. The minimum required points for group of indicators D for obtaining the scientific degree "Doctor" in area 7. Health and Sports, according to the Act for the Development of the Academic Staff in the Republic of Bulgaria (ADASRB), are 30. I am fully convinced that the personal participation of Sonya Yordanova Ivanova, in the experimental part, is indisputable.

5. Evaluation of the professional and personal qualities of the doctoral student

The *Experiments* and *Results and Discussion* sections follow good logical sequence. The detailed description of the methods used allows them to be reproduced by other scientists. The contribution and the significance of the conducted research and the obtained results are systematised in the conclusions made, and the contributions formulated by the doctoral student. The PhD student presented a new method for the synthesis of several Nitrofural polymorphs, together with the synthesis of a new, unknown Nitrofural polymorph. She has realised the synthesis of unknown metastable Nitrofural forms. She presented a new, specific electrochemical method for the identification of Nitrofural. She determined the photo- and cytotoxicity of Nitrofural.

CONCLUSION

Sonya Yordanova Ivanova has successfully developed a dissertation in the scientific specialty "Pharmaceutical chemistry". The dissertation consists of scientific and scientific-applied results, which are original contributions to science and correspond to the Act for Development of the Academic Staff in the Republic of Bulgaria (ADASRB), the Regulations for the Academic Development in MU-Varna.

The dissertation work shows that Sonya Yordanova Ivanova possesses thorough theoretical knowledge and professional skills in the scientific program Pharmaceutical chemistry, as she demonstrates qualities and skills to implement an individual research study.

Taking into account the above-mentioned, I give with conviction my positive assessment to the research work presented with the dissertation, a summary of the dissertation, obtained results and contributions. **I propose to the honourable scientific jury to award Sonya Yordanova Ivanova the educational and scientific degree Doctor** in the doctoral program Pharmaceutical chemistry, professional field 7.3 Pharmacy, Higher education field 7. Healthcare and Sport.

15.04.2022

Reviewer:


Assoc. Prof Kalin Valentinov Ivanov, PhD