

REVIEW

by **Prof. Dr. Angelina Ilieva Kiselova-Yaneva, MD** – Medical University – Sofia
of a dissertation for the award of the educational and scientific degree '**PhD**'

professional field **7.2. Dental medicine**

PhD program "**Dental Clinical Allergology** "

Author : Dr. Stephany Ivanova Doshkova

Form of PhD studies: full-time

Department: Imaging Diagnostics, Dental Allergology and Physiotherapy, Medical University, Plovdiv

Subject: Biological effects on the materials for orthodontic treatment

Scientific supervisor : Prof. Dr. Iliyana Lyubomirova Stoeva, MD, Medical University, Plovdiv

1. General presentation of the procedure and the PhD student

The documentation submitted under the procedure on paper and electronically is complete and in accordance with Art. 70 (1) from I. Section. Acquisition of the educational and scientific degree " PhD " at MU-Plovdiv; Regulations of MU-Plovdiv dated 28.01.2021. Includes a dissertation, an abstract and all required accompanying documents. The dissertation is built in accordance with the generally accepted structure for this type of scientific work and contains all mandatory sections - introduction, literature review, goal and objectives, material and methodology, results and discussion, summary, conclusion, contributions, bibliography and appendices. The structure is logical, consistent and meets the requirements for a dissertation for the acquisition of the educational and scientific degree " PhD".

In support of her dissertation research, Dr. Doshkova has presented three scientific publications in specialized journals and two participations in an international scientific forum. The presented publications and scientific communications are directly related to the topic of the dissertation and present the main results of the conducted clinical, electrochemical, biochemical and experimental studies.

2. Brief biographical data about the PhD student

Dr. Stefany Ivanova Doshkova was born on May 28, 1994. She completed her secondary education at the National Aprilovska High School – Gabrovo with German.

In 2021, she graduated with a degree in Dentistry from Goethe-Universität, Frankfurt am Main, Germany, and obtained the qualification of Doctor of Dental Medicine. In the period 2022–

2025, she completed a Master of Science (MSc) in Orthodontics at Donau-Universität Krems, Austria.

Since December 6, 2022, she has been enrolled as a full-time PhD student at the Department of Imaging Diagnostics, Dental Allergology and Physiotherapy at the Faculty of Dental Medicine of the Medical University - Plovdiv.

Her professional experience is in the field of orthodontics. In the period from 10.01.2022 to 31.03.2024 she worked as a dentist in a specialized orthodontic practice in the city of Darmstadt, Germany. From 10.08.2024 to the present she holds the position of "orthodontist" at the Dental Center "St. Ivan Rilsky" - the city of Gabrovo.

The PhD student maintains active postgraduate qualification through participation in national and international scientific forums and specialized courses in the field of orthodontics, including the International Orthodontic Congress in London, the Quintessenz Congress on Practical Orthodontics in Berlin, and scientific forums dedicated to the interdisciplinary aspects of orthodontic treatment.

She is fluent in German, certified by a TestDaF certificate, as well as English. She has experience working in an international professional environment and actively participates in initiatives to improve professional qualifications.

3. Relevance of the topic and appropriateness of the set goals and objectives

The problem developed in the dissertation is topical and has significant scientific and scientific-applied significance. The modern development of orthodontics, the expansion of the age range of patients and the introduction of new materials place increasingly higher demands on their biological safety and biocompatibility.

The study aims to assess the allergenic and cytotoxic potential of orthodontic materials and the role of oxidative stress during their prolonged contact with oral tissues. The issue under consideration is of practical importance, as the results may assist in the selection of appropriate materials and the implementation of an individualized approach to orthodontic treatment, especially in patients at increased risk of adverse biological reactions.

The set goals and objectives are clearly formulated, logically follow from the current state of the problem and correspond to the topic of the dissertation.

4. Knowing the problem

Dr. Doshkova demonstrates good knowledge of the current state of the scientific problem being developed. The literature review covers current and relevant publications, which are systematized and critically analyzed. On this basis, a reasoned assessment of the available scientific

data is made, unresolved issues are outlined and the need for conducting the present study is argued. This shows the ability to creatively interpret literary sources and formulate one's own scientific approach to the issue under consideration.

5. Research methodology

The chosen research methodology is adequate to the set goal and objectives of the dissertation work and creates the necessary prerequisites for obtaining reliable and scientifically sound results. The study is planned as a complex clinical and laboratory study, which combines clinical, allergological, electrochemical, biochemical and experimental methods. This multidisciplinary approach allows for a comprehensive assessment of the biological effects of orthodontic materials.

The selection of the subjects, the diagnostic methods used, the laboratory tests and the applied statistical analyses are consistent with the nature of the study and allow for a well-founded answer to the scientific tasks set. The methodology is described in detail, logically structured and ensures good reproducibility of the results obtained.

6. Characteristics and evaluation of the dissertation work

The dissertation is written on 213 pages, is structured logically and consistently, with the individual chapters being interconnected and following the general concept of the research. The literature review presents a critical analysis of the current state of the problem and argues the need for conducting the research. The goal, tasks and methodology are clearly formulated and correspond to the topic of the dissertation.

The results are presented systematically, illustrated with 38 tables and 30 figures, and subjected to in-depth analysis and discussion. Dr. Doshkova interprets the obtained data in the context of existing literary sources, which allows the formulation of justified conclusions.

The material on which the contributions of the dissertation are based is sufficient in volume and has been collected using modern, established and reliable clinical, laboratory and statistical methods. This gives reason to assume that the results obtained are reliable and represent a reliable basis for the scientific and applied scientific conclusions made.

The bibliography includes 261 literary sources, of which 8 are in Cyrillic and 253 in Latin.

7. Contributions and significance of the development for science and practice

The dissertation is distinguished by a complex and interdisciplinary approach to the evaluation of the biological effects of orthodontic materials, combining allergological, clinical,

electrochemical, biochemical and cellular studies. This allows for a comprehensive assessment of the interaction between orthodontic materials and the oral biological environment.

The main scientific contributions are expressed in obtaining new data on the frequency of sensitization to allergens associated with orthodontic materials, determining risk anamnestic factors, monitoring the electrochemical behavior of metal elements, the dynamics of oxidative stress during treatment and assessing the cytotoxic potential of different orthodontic materials. The combined analysis of all the obtained results is particularly valuable, which allows for a more in-depth interpretation of the studied processes.

The dissertation proves, using a complex of modern methods, new aspects of the biological interaction between orthodontic materials and the oral environment, and the results obtained enrich existing scientific knowledge.

The scientific and applied contributions are expressed in the creation of a scientific basis for individualized selection of orthodontic materials according to the biological characteristics of the patient. The results have practical value for increasing the safety of orthodontic treatment and can be implemented in clinical practice in the evaluation and selection of biocompatible orthodontic materials.

The conducted research has good prospects for development by expanding clinical observations and including additional biomarkers, which would contribute to the further development of the personalized approach in orthodontics.

8. Assessment of dissertation publications

The results of the dissertation work are presented in three scientific publications, all co-authored, two of which were published in the journal *MedInform*, and one in *Comptes rendus de l'Académie bulgare des Sciences*, a refereed international journal with an impact factor of 0.3. All publications are in English and reflect the main directions and results of the dissertation research.

The PhD student also presented the results in two reports at the International Scientific Congress of Dentistry "Science and Practice" (Plovdiv, 2026), which testifies to their popularization among the scientific community.

The presented publications adequately reflect the main scientific results and contributions of the dissertation work.

9. Personal participation of the PhD candidate

The materials presented provide grounds to assume that the PhD student had a leading role in the planning and implementation of the dissertation research, the processing and analysis of the

results obtained, as well as in their presentation in scientific publications and scientific forums. Although the publications are co-authored, there is no evidence to cast doubt on her significant contribution to the implementation of the research.

I believe that the formulated scientific and applied scientific contributions are to a significant extent the personal merit of the PhD student. They are a logical consequence of the research work carried out, the correctly interpreted results and the scientific conclusions drawn, which allows the contributions to be recognized as her independent achievement.

10. Autor's abstract

The abstract is prepared in accordance with the requirements of the Law on the Development of Academic Staff in the Republic of Bulgaria and the Regulations for its Implementation. It is structured logically and contains the necessary sections, clearly presenting the relevance of the topic, the purpose and objectives of the research, the methods used, the results obtained, the scientific and applied scientific contributions, as well as the publications on the dissertation work.

The content of the abstract correctly and objectively reflects the main results, conclusions and contributions of the dissertation, providing a sufficiently complete picture of the research conducted and its scientific and practical significance.

11. Critical remarks and recommendations

I have no significant critical remarks regarding the presented dissertation, the conducted research and the attached materials. The dissertation is developed at a high scientific level, with clearly formulated goals, appropriate methodology, correct analysis of the results and well-argued conclusions.

Future studies with a larger number of patients and a longer follow-up period could be recommended, which would contribute to further validation and expansion of the obtained results.

12. Personal impressions

Although I know the PhD candidate personally, I have no direct observations of her daily research work. My current assessment is based on the presented dissertation, the abstract and accompanying materials. They give reason to conclude that Dr. Stefany Doshkova approaches the problem being developed responsibly, consistently and with the necessary scientific depth. The dissertation highlights good theoretical preparation, skills for independent planning and conducting scientific research, as well as the ability for critical analysis, interpretation and argumentative presentation of the results obtained.

13. Recommendations for future use of the dissertation contributions and results

I believe that the scientific and applied contributions of the dissertation have the potential for successful implementation in orthodontic practice and can serve as a basis for subsequent research aimed at developing a personalized approach to the selection of orthodontic materials.

CONCLUSION

The dissertation **contains scientific, scientifically-applied and applied results that represent an original contribution to science** and **meet all** the requirements of the Act on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its Implementation and the relevant Regulations of MU-Plovdiv. The presented materials and dissertation results **fully** comply with the specific requirements of MU - Plovdiv.

The dissertation shows that PhD student Dr. Stephany Ivanova Doshkova **possesses** in-depth theoretical knowledge and professional skills in the scientific specialty of **Dental clinical allergology** by **demonstrating** qualities and skills for independently conducting scientific research.

Due to the above, I confidently give my **positive assessment** of the research conducted, presented by the above-reviewed dissertation, abstract, achieved results and contributions, and **I propose to the esteemed scientific jury to award the educational and scientific degree 'PhD'** to Dr. Stefany Ivanova Doshkova in the PhD program **Dental clinical allergology**.

28 July, 2026

Reviewer:



Заложено на основание
Чл. 5 §1, 6. "В" Регламент (ЕС) 2016/679

Prof. Dr. Angelina Kiselova-Yaneva, MD