

**To the Chairman of the Scientific Jury,
appointed by Order No. № P-109-232 of 2025
of the Rector of the Medical University "Prof. Dr.
P. Stoyanov," Varna**

Review

From Assoc. Prof. Dr. Pavel Dobrev, MD Department of "Health Care", University "Prof. Dr. Asen Zlatarov" – Burgas

Regarding the public defense of the dissertation by **Dr. Darina Alexieva Davidova** for the acquisition of the scientific and educational degree "Doctor" in the scientific specialty Obstetrics and Gynecology, on the topic "**CO₂ LASER TREATMENT IN UROGYNECOLOGICAL CONDITIONS**" in the field of higher education, 7. Health Care and Sports, in the professional direction 7.1 Medicine, specialty "Obstetrics and Gynecology."

Dr. Darina Alexieva Davidova is a specialist in obstetrics and gynecology with over ten years of professional experience in clinical and outpatient gynecology, teaching, and scientific research. Born on September 17, 1988, in Krumovgrad, she currently lives and practices in Burgas. She completed her Master's degree in Medicine at the Medical University – Plovdiv between 2007–2013, and later obtained her specialization in obstetrics and gynecology at the same university (2014–2018). Between 2019–2020, she further expanded her academic qualifications with a second Master's degree in Health Management from the University of Agribusiness and Development of Regions – Plovdiv.

Her career has included working in medical institutions such as Pazardzhik General Hospital, University Hospital “Deva Maria” – Burgas, and “New Life” Medical Center – Burgas, where she currently practices as an obstetrician-gynecologist. Since 2021, she has been an assistant at the Department of Obstetrics and Gynecology at the University "Prof. Dr. Asen Zlatarov" – Burgas, where she teaches courses in obstetrics and gynecology.

Her scientific work is focused on contemporary technologies in gynecological practice, with a special interest in the treatment of urogynecological conditions using the CO₂ laser. Her dissertation, titled "**CO₂ Laser Treatment in Urogynecological Conditions**," is supported by several scientific publications, including those in the *Black Sea Journal of Medicine and Public Health* and *Medical Review*. Her research interests also include stress urinary incontinence, polycystic ovarian syndrome, preventive approaches to infertility, and the consequences of cesarean section.

Dr. Davidova has completed specialized training in various medical topics, including courses in colposcopy, hysteroscopy (level one), ultrasound diagnostics in obstetrics and gynecology (level

one), as well as certification in the use of CO₂ laser in gynecological practice. She actively participates in various national medical conferences and forums, including the National Conference on Innovations in Obstetrics and Gynecology, the National Conference on Public Health, the Autumn Medical Forum, and the National Obstetrics Conference, where she presents reports related to laser therapy, the early postoperative period, assisted reproduction, and the risks associated with cesarean section.

The dissertation submitted for review by **Dr. Darina Alexieva Davidova** is written in literary Bulgarian and spans 147 pages, including 86 figures, 1 table, and 3 survey questionnaires. It cites 202 literary sources, of which 9 are Bulgarian authors and 193 are foreign authors. It is well-formatted and meets the requirements for a scientific work.

Relevance of the Problem and Evaluation of the Literature Review

The dissertation presents a highly relevant and significant topic for contemporary gynecological practice. Urogynecological conditions, particularly stress urinary incontinence (SUI), present a serious medical and social challenge that directly affects the quality of life of affected women. SUI impacts not only the physical health but also the emotional and social functioning of the patients. Despite the widespread nature of the problem, a significant portion of patients remain undiagnosed or do not receive adequate treatment due to lack of awareness, stigma, or fear of invasive interventions.

In this context, the chosen focus of the dissertation – the use of CO₂ laser as a modern, minimally invasive, and gentle method for treating SUI – is highly timely and relevant. The research presented substantiates the therapeutic effectiveness and safety of this approach and demonstrates its potential as an innovative alternative in the treatment of chronic urogynecological conditions. This contributes to the development of personalized and technologically advanced strategies in gynecology.

The literature review, built on 53 pages, is comprehensive and professionally structured. The author demonstrates diligence in selecting and analyzing relevant scientific literature, covering both Bulgarian and foreign sources. There is a clear effort to critically evaluate the accumulated data and draw essential scientific and clinical conclusions, which justify the need for conducting her own research. The review is logically consistent and of high cognitive value, making it a solid foundation for the entire scientific work.

Evaluation of the Formulated Goal and Research Tasks

The goal of the dissertation is clearly formulated and corresponds to the detailed literature review. It aims to investigate the effectiveness of CO₂ laser therapy in treating stress urinary incontinence, addressing an important and clinically relevant issue. The eight tasks outlined are specific, logically structured, and fully aligned with the stated goal. They cover both theoretical and practical aspects of the research. I believe that the goal and tasks are precisely defined and provide a solid foundation for conducting scientifically sound research.

Evaluation of the "Materials and Methods" Chapter

The "Materials and Methods" chapter is presented clearly across three pages. The study population consists of 107 patients, which is sufficient for obtaining reliable results. The methods used are modern and scientifically grounded, providing a solid basis for evaluating the therapeutic efficacy of CO₂ laser in treating stress urinary incontinence and other urogynecological conditions. The choice of methods is precise and adheres to the latest scientific advancements in urogynecology. The CO₂ laser therapy is innovative and minimally invasive, offering high effectiveness. The use of modern statistical methods for data analysis ensures the objectivity and reliability of the results, allowing for valid conclusions. The methodological approach is logical and guarantees the credibility of the results, which is essential for the scientific development of the field and the implementation of new therapeutic technologies in clinical practice.

Evaluation of the "Results and Discussion" Chapter

In the "Results and Discussion" chapter, the author presents the findings across 82 pages in five main sections. Each section is thoroughly discussed, and the results are presented clearly and logically with visual aids that facilitate interpretation. The discussion of the results is structured by patient groups, and the author provides her own opinion and well-founded conclusions regarding the outcomes. The novelty of the research is emphasized, noting the absence of similar studies in Bulgaria. The research shows a positive effect of CO₂ laser in the treatment of stress urinary incontinence and other urogynecological conditions, highlighting the minimally invasive nature of the procedure. The results are supported by visual data and statistical analyses, ensuring reliability. The author provides a comparative analysis with other studies, proving the scientific significance of the research. In conclusion, the results and discussion demonstrate the high scientific level of the dissertation and convincing evidence of the effectiveness of CO₂ laser in urogynecological practice.

Evaluation of Conclusions and Contributions

The conclusions in the dissertation are 11 in total, which exceeds the number of tasks. This is justified by the complexity of the topic. Each conclusion is supported by specific data from the study, making them credible and well-founded. They cover both theoretical and practical aspects related to the treatment of urogynecological conditions with CO₂ laser and contribute to innovative approaches in clinical practice. The contributions are optimally numbered – 5 original contributions and 5 confirmatory ones. The original contributions highlight the innovation of using CO₂ laser as a method for treating stress urinary incontinence. The confirmatory contributions affirm and expand existing theories and methods in the context of new findings. The conclusions and contributions are realistic and substantiated, offering significant progress in the field of urogynecology. They expand the knowledge of the effectiveness of CO₂ laser and demonstrate the importance of new technologies in the treatment of urogynecological conditions.

Scientific Communications: Dr. Davidova has the required number and quality of publications

related to her dissertation work – 3 publications and 3 presentations at conferences, all as the first author.

Conclusion

Dear colleagues from the Scientific Jury,

The submitted materials meet the requirements of the Health Act, the regulations for its application, and the relevant rules of the Medical University – Varna. **Dr. Darina Davidova's** work represents a significant scientific contribution to the field of urogynecology, with clearly formulated tasks and achievable results. The dissertation is well-structured and relevant, with the proposed methods and conclusions being substantiated and reproducible. The author demonstrates innovations in the treatment of urogynecological conditions through CO₂ laser, which has practical implications for clinical practice. I confidently declare that the work meets the requirements for awarding the scientific degree "Doctor" and I will vote positively.

Date: May 15, 2025
Burgas

Assoc. Prof. Dr. Pavel Petrov Dobrev, MD

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