



**TO
THE MEMBERS OF THE SCIENTIFIC
JURY
DETERMINED BY ORDER
№ P- 1987/28.10.2021.
OF THE RECTOR OF MU-PLOVDIV
PROF. Dr. MARIANA MURDZEVA,
PhD**

STATEMENT

by **Assoc. Prof. Ivan Lulchev Chenchev, PhD, Department of Oral Surgery, Faculty of Dental Medicine, Medical University – Plovdiv, head CDI of RIMU - Plovdiv** on the PhD dissertation under the scientific program “Periodontology and OMD”, professional field 7.2 Dental medicine, field of higher education; 7. Healthcare and sport.

Author: Dr. Ivan Venkov Nachkov

Form of doctoral studies: independent preparation

Department: „Periodontology and OMD“, Faculty of Dental Medicine - Plovdiv

Topic: „*Laser-assisted therapy of peri-implantitis with Er:YAG laser*”

Supervisor: 1. Assoc. Prof. Dr. Georgi Tomov, PhD

2. Assoc. Prof. Dr. Plamen Zagorchev, PhD

1. General presentation of the procedure and the doctoral student

The presented paperwork and digital materials are in accordance with article 70 (1), section I. Acquisition of PhD degree at MU-Plovdiv; Regulations of MU-Plovdiv from 28.01.2021. The doctoral student has presented 3 publications.

Dr. Ivan Nachkov was born on 31.01.1977 in Svishtov. He graduated dental medicine in 2004 and medicine in 2013 at MU-Plovdiv. He is an assistant professor at the department of Periodontology and OMD at MU-Plovdiv. He works at **MHAT “St. Panteleimon – Plovdiv”**. Acquired a degree in Maxillofacial surgery in 2011.

2. Relevance of the topic

Dental implantology is growing to be an ever-greater part of the clinical practice of the dental practitioner. The increased number of dental implants placed in recent years is going to lead to an increased risk of complications. The most common complications following a dental implant placement are peri-mucositis and peri-implantitis. The total number of patients with dental implants has greatly increased, and for this, the incidence of local complications (peri-implantitis) which will require treatment.

There are many different peri-implantitis treatment strategies with varying success. The search for new techniques and means is still going and is very relevant, which shows that the authored topic is modern and up to date.

The topic corresponds to the set goals and the tasks for their completion. The materials and methods are feasible, well selected and use modern technologies. The problem at hand is of high importance to the dental implantology and dental medicine, both from a scientific and practical perspective.

3. Details of the studied problem

In the presented literature review Dr. Nachkov has included a total of 326 scientific sources. It includes many authors and papers published in recent years. Dr. Nachkov has followed and analyzed the indications, contraindications, and treatment options for peri-implantitis available in modern day dental implantology. Most of the possible causes of peri-implantitis were taken into consideration. He has described and analyzed different types of laser devices, their technical specifications, advantages, disadvantages, and possibility of use for peri-implant treatment. After a critical analysis of the data in the literature, he formulated some unresolved problems. The latter serve as a basis for the thesis and define its goals.

4. Methodology

The purpose is to assess the Er:YAG laser-assisted therapy of peri-implantitis using experimental, laboratory and clinical tests.

To achieve this goal, the following tasks were set:

1. To conduct a scanning electron microscopy and a comparative analysis of the structural changes in the titanium surface after a treatment with Er:YAG and diode lasers.
2. To study the changes in temperature in and around the implant during the laser irradiation with Er:YAG, CO₂ and diode lasers. This task is divided into two subtasks:
 - a. Study using an integrated interface digital system with thermocouples
 - b. Study of the temperature in real time using infrared thermal camera
3. To study the decontamination capabilities of the Er:YAG laser on the periodontopathogen microorganisms.
4. To perform a clinical study with Er:YAG laser in laser-assisted therapy of peri-implantitis. This task is divided into two subtasks:
 - a. By studying the clinical efficacy of the Er:YAG laser in laser-assisted therapy of peri-implantitis
 - b. By creating a mobile application for the registration of clinical cases and derivation of a statistical analysis

The included material is sufficient to obtain reliable results. The research methods are accurately performed. The results are reliably reported and have been subjected to statistical and clinical analysis.

5. Characteristics and evaluation of the dissertation and contributions

Dr. Nachkov has presented a well-formed doctoral study, containing all the basic elements.

The dissertation is 174 pages long (excluding appendices) and includes 5 tables, 71 figures and diagrams and 9 appendices. The bibliography consists of 326 literature sources.

Own research and discussion are 62 pages long, and the results are correctly described, analyzed and interpreted.

Most of the conclusions made objectively reflect the performed experimental and clinical work on the completion of the set tasks and contribute to the achievement of the final goal.

A total of 6 contributions have been made, which speaks for the significance of the results for the dental sciences and practice, especially regarding dental implantology. They provide guidelines for reliable treatment of peri-implantitis.

6. Evaluation of the publications and personal contributions of the doctoral student

The author has presented three additional papers close to the topic of the proposed dissertation. One of them is pending for print and is referred in Scopus.

The dissertation on topic „*Laser-assisted therapy of peri-implantitis with Er:YAG laser*“ is a personal work of the author. He was directly involved in the scientific project and the fulfillment of the related scientific and clinical work.

7. Abstract

The abstract is prepared in accordance with the requirements of the LDASRB and the regulations of MU – Plovdiv.

CONCLUSION

The dissertation *includes scientific and practical results, which consist of original contribution to the science and meet all* requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the regulations for the application of LDASRB and the Regulations of MU – Plovdiv. The presented materials and results fully comply with the specific requirements adopted in the Regulations of MU – Plovdiv regarding the application of LDASRB.

The dissertation shows that the doctoral student dr. Ivan Nachkov has in-depth theoretical knowledge and professional skills in the scientific specialty of Periodontology and OMD as well as Dental Implantology. He has demonstrated the necessary qualities and personal skills for the conduction of an independent research.

Given the statement above, I can confidently assign a *positive grade* on the conducted study, the dissertation presented for review, abstract, results and contribution, and *suggest the esteemed scientific jury to award the educational and scientific degree “Doctor”* to Ivan Venkov Nachkov under the scientific program “Periodontology and OMD”, professional field 7.2 Dental medicine, field of higher education; 7. Healthcare and sport.

29.11.2021 г.

Statement Author:

Assoc. Prof. Dr. Ivan Chenchev, PhD