

STATEMENT

From Prof. Petya Tzvetkova, DSc

Faculty of Medicine, University "Prof. Dr. Asen Zlatarov ", Burgas

of dissertation for awarding educational and scientific degree "Doctor" in the field of higher education 7. Health and sports, professional field 7.1. Medicine, doctoral program "Urology"

Author: **Dimitar Todorov Delkov, MD** – self-study PhD student at the Department of Urology and General Medicine, Faculty of Medicine, Medical University of Plovdiv

Topic: "Urinary oncometabolites - a new opportunity for early detection and prediction of the clinical course of verified prostate cancer "

Supervisors:

Prof. Dr. Ivan Dechev, MD, Ph.D.

Assoc. Prof. Yordanka Uzunova, Ph.D.

General presentation of the procedure and the doctoral student

The doctoral student was enrolled by Order of the Rector of MU - Plovdiv R-1567 / 05.07.2018 and expelled with the right to defense by decision of the Faculty of Medicine of MU - Plovdiv with protocol № 1 / 09.02.2022. The materials in electronic format are in accordance with Article 70 (1) of I. Section. Acquisition of educational and scientific degree "DOCTOR" and scientific degree "DOCTOR OF SCIENCES" in MU - Plovdiv of the Regulations for academic development in MU - Plovdiv from 28.01.2021.

The doctoral student has applied 3 pcs. publications in connection with the dissertation.

Actuality of the topic

The choice of the topic of the dissertation is well-timed and especially relevant both due to the high incidence of prostate cancer and high mortality in men of working age. Early and accurate diagnosis is especially important for the choice of treatment approach and a favorable outcome of this socially significant malignancy.

Despite the great achievements of modern oncology medicine and the emergence of new concepts for diagnostic and therapeutic methodology to prostate cancer, a new niche is revealed, namely the recognition of additional biomarkers. They would help in early detection, efficacy of clinical behavior and prediction of outcome in verified prostate cancer.

Knowledge of the problem

In the chapter "Literature Review" the doctoral student shows that he is well acquainted with the abundant and controversial literature on the subject. Extensive information on the epidemiology, risk factors and clinical and pathological staging of this malignancy is included. Methods for diagnosing prostate cancer are also very well described, with sufficient attention paid to their diagnostic and prognostic value. The doctoral student presents the well-known classic and some new still in progress of study tumor markers.

It is obvious that Dr. Delkov knows in detail the problem and the results published so far on the topic of the dissertation. The cited sources are appropriately selected and informative. The literature review presents the doctoral student as a researcher with skills to interpret, analyze and evaluate the scientific achievements accomplished so far. I got an impression of good scientific style and expression, which implies a high level of theoretical training and awareness of the problem of prostate cancer, as well as the ability to apply scientific terminology adequately. From the presented literature review and the detailed correctly listed bibliography it can be concluded that Dr. Delkov shows ability for scientific analysis.

Characteristics and evaluation of the dissertation and contributions

The goal of the dissertation is clearly formulated; the 4 specific practical tasks set by the doctoral student are in accordance with the defined goal and actually contribute to its realization.

The materials and methods in the dissertation are presented correctly and comprehensively. An appropriate set of modern diagnostic and bioanalytical methods has been used to achieve the tasks set. The criteria for selection of patients, diagnosis of the disease, preliminary derivatization of the tested samples, conditions for their chromatographic analysis, normalization of the results obtained in relation to creatinine are included, adequate statistical analysis is used to evaluate the data.

The conducted research has a permit from the Ethics Commission at the Medical University of Plovdiv. The requirements for informed consent from patients have been met.

The results are systematized, reliable, corresponding to the tasks set, and are presented with the help of informative tables and figures, to which the results of the applied statistics are presented. Admirations for the simultaneous presentation of the data received with discussion. The contribution of the dissertation is the data related to the comparative analysis of individual oncometabolites in the urine of patients with prostate cancer in different age groups, in patients divided into ISUP groups, as well as the correlations between the studied metabolites and PSA.

When discussing his own results, the doctoral student offers summaries, systematization, and comparison with the results of other authors and teams, presenting his own hypotheses. Thus, he shows depth and ability to analyze.

Logically, from the results obtained and their discussion, 7 conclusions were made, which give an answer to the tasks set. Significant differences in urinary concentrations of 5 of the 8 metabolites studied - ethanolamine, sarcosine, kynurenine, β -alanine, and isoleucine in

patients with verified prostate cancer compared to the control group, as well as their proven highest diagnostic reliability and predictive accuracy. The applied analysis of the diagnostic potential by examining the curve of performance (ROC curves) of metabolites showed significantly elevated concentrations in prostate cancer, found the highest diagnostic reliability and predictive accuracy of a panel of 5 metabolites - ethanolamine, sarcosine, kynurenine, β -alanine and isoleucine.

A total of 5 original contributions and 2 confirmatory ones were formulated.

The list of publications presented by Dr. Dimitar Delkov includes 3 publications, one of which is in a journal with an impact factor according to Web of Science database, as well as 4 participations in scientific forums and projects.

Conclusion

The dissertation contains scientific, scientific-applied and applied results, which represent an original contribution to science and **meet all the requirements** of the Development of Academic Staff in the Republic of Bulgaria Act and the Regulations for its implementation. The presented materials and dissertation results fully comply with the specific requirements of the Regulations for Academic Development at MU - Plovdiv (2021).

The dissertation shows that Dr. **Dimitar Todorov Delkov** has in-depth theoretical knowledge and professional skills in the scientific specialty "Urology", demonstrating qualities and skills for thorough research. I believe that doctoral study has fulfilled its mission in both educational and scientific aspects.

Due to the above, I confidently give my positive assessment of the research presented by the above dissertation, abstract, scientific papers, achievements, and contributions, and I propose to the esteemed scientific jury to award doctor degree to **Dimitar Todorov Delkov**, MD in a doctoral program in urology in the field of higher education 7. Healthcare and sports, professional field 7.1. Medicine and scientific specialty "Urology".

May 3, 2022

Burgas

Prepared by:



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

(Prof. Petya Tzvetkova, DMedSc)