

TO THE CHAIRMAN OF THE SCIENTIFIC JURY,  
DETERMINED BY ORDER  
No. P-109-159/24.02.2023 OF THE RECTOR  
OF MEDICAL UNIVERSITY  
"PROF. DR. PARASKEV STOYANOV" - VARNA

### STANDPOINT

by Prof. Dr. Margaritka Ivanova Boncheva, MD, internal member of the scientific jury

Scientific specialty - Clinical Laboratory, MU - Varna

UMBAL "Prof. Dr. Alexander Chirkov" EAD - Sofia, Head of Clinical Laboratory

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On the basis of Protocol No. 1 / 09.03.2023 at a meeting of the National Academy of Sciences, I am assigned to prepare an Opinion on the procedure for acquiring the educational and scientific degree "Doctor".

### REGARDING

DISSERTATION PAPER FOR OBTAINING THE DOCTOR OF SCIENCES ON THE SUBJECT:  
ROLE OF VITAMIN D AND VITAMIN B12 IN PREGNANT WOMEN AND NEWBORN.

Dissertation student: Monika Todorova Toshkova, full-time doctoral student, in the Clinical Laboratory Department of the Medical University of Varna. Research supervisor - Associate Professor Daniela Ivanova Gerova, Ph.D.

#### *Procedure data:*

By Order No. R-109-29 / 01.02.2019 of the Rector of MU-Varna, Dr. Monika Toshkova Todorova is enrolled as a full-time doctoral student in the doctoral program "Clinical Laboratory" from professional field 7.1 Medicine, field of higher education 7. Health care and sports with a dissertation topic: Role of vitamin D and vitamin B12 in pregnant women and neonates. Research supervisor is Assoc. Dr. Daniela Ivanova Gerova, MD. The training is organized and conducted at the Department of "General Medicine and Clinical Laboratory", MF of the University of Varna. The training ends in the restructured Department of Clinical Laboratory, MF, MU-Varna. With protocol No. 23/30.01.2023 of the SC at the Department of Clinical Laboratory, Dr. Todorova was dismissed with the right of defense.

The presented set of materials on paper and electronic media is in accordance with the Regulations for the Development of the Academic Staff of the University of Varna and the procedure for acquiring the Doctorate of the National Academy of Sciences.

#### *Brief biographical data and professional development of the candidate:*

Dr. Todorova was born in 1977 in Ruse. From 1991 to 1996 he studied at the "Baba Tonka" Mathematical High School - Ruse. From 1998 to 2004, he studied at MU-Varna - master's degree, specialty "medicine". From 2008 to 2013, he was a specialist at the University of Varna. From 01.01.2014 has a recognized specialization in "clinical laboratory". From 02.07.2019 is a Master in Health Management at VUARR-Plovdiv. From 2007 to 2016, he was a doctor at UMBAL "St. Marina" - Varna, 2016-2017 worked at "Medika Ruse" OOD - Ruse. From 01.08.2017 until now he works in the DCC "St. Marina" EOOD - Varna. From 12.02.2018 until now, Dr. Todorova is an assistant at the

Department of Clinical Laboratory at MU-Varna. She conducts clinical laboratory exercises for 4th year medical students - Bulgarian and English language training, as well as FOS students - midwives. We have witnessed a progressive professional growth and academic career.

Dr. Monika Todorova is a member of BDKL and BLS.

*Evaluation of the dissertation:*

- Structure: The dissertation contains 187 pages for the accepted format, illustrated with 34 figures and 59 tables. The bibliography consists of 350 literary sources, of which 5 in Cyrillic and 342 in Latin, 3 internet sites. The dissertation is written in proper Bulgarian. The statement is well constructed and logically coherent. In the structure of the dissertation, the required manner is observed - Contents - 4 pages, Abbreviations used - 3 pages, Introduction - 3 pages, Literature review - 51 pages, Aim and tasks - 2 pages, Material and methods - 9 pages ., Results- 53 p., Discussion-32 p., Conclusions-2 p., Contributions-2 p., Scientific publications on the topic-1 p., bibliography-34 p., Acknowledgments-1 p. Tables and graphs are made with high quality, informative in terms of content, adequately located and do not duplicate information in the main text.
- Relevance of the topic: The pregnant woman and the newborn child are always in the top-current topics. The data in the world medical literature about the increasingly widespread insufficiency and even deficiency of vitamin D and vitamin B12, as well as the scarce studies of this condition in pregnant women and newborn children in our country, are an important prerequisite for the research interest in this dissertation work. Vitamin D deficiency during pregnancy is associated with the occurrence of numerous complications for both the pregnant woman and the newborn, namely: pregnancy-induced hypertension, preeclampsia , gestational diabetes mellitus, bacterial vaginosis , premature birth, lower birth weight, impaired development of the child's bone system, etc. Insufficiency or deficiency of vitamin B12 can lead to disturbances in DNA synthesis and cellular metabolism with serious clinical consequences such as macrocytic anemia, neurological dysfunction , hyperhomocysteinemia , methylmalonic acidemia .
- Literature overview: It is spread over 51 pages. Pregnancy as a physiological state was considered; pathological pregnancies and adverse outcomes for the mother and the newborn; metabolic relationships of vitamin D and pregnancy; the effects of vitamin D deficiency on the course of pregnancy; the effects of vitamin D deficiency on fetal growth; the recommendations for supplementation are considered ; a detailed overview of laboratory methods for testing vitamin D in the blood. The deficiency of vitamin B12 was followed according to the same scheme. The review of literature covers 350 literary sources, with no Bulgarian authors. At the end of the review, there is a smooth transition to the purpose and tasks of the dissertation's scientific research.
- Purpose and tasks of the dissertation: The purpose of the dissertation is to determine the vitamin D and vitamin B12 status of pregnant women with normal and pathological pregnancies and to evaluate the role of their deficiency and/or insufficiency on the course of pregnancy and its outcome. There are 3 main tasks, with 2 and 3 having 5 subtasks each, clarifying the integrity of the study.
- Material and methods: The basis for the development of the dissertation is indicated; subjects and research design; inclusion and exclusion criteria in the study; Methods: questionnaire, anthropometric measurements, detailed analytical laboratory methods for

blood determination of: vitamin D, vitamin B12, methylmalonic acid, insulin, glucose; Statistical methods for the analysis of the results.

- Results and Discussion: The most essential part of the dissertation work. A total of 259 pregnant women were included, divided into three groups - healthy pregnant women, those with GDM and those with preeclampsia . The risk of developing a pregnancy complication was assessed according to the age of the pregnant women and their state of health. In these groups, the indicators of carbohydrate metabolism, namely OGTT and insulin, were examined. An anthropological assessment of all newborns was performed. Serum 25(OH) D levels were assessed to assess deficiency, insufficiency, marked insufficiency and sufficiency. The results are interpreted in the context of seasonality and vitamin D supplementation . The influence of vitamin D status on adverse pregnancy outcome in terms of the newborn and the occurrence of preterm birth and low birth weight in healthy pregnant women and women with pregnancy complications is shown. . This sequence of the study has also been applied in determining the vitamin B12 status in the serum of pregnant women and newborns. The results and discussion are presented in detail, but clearly and concisely in 85 pages of the dissertation.
- Conclusions and contributions: Dr. Todorova drew clear and precisely formulated conclusions corresponding to the tasks set. The conclusions are divided into three groups - Pregnancy and risk factors for the occurrence of adverse complications (2 conclusions); Vitamin D status and pregnant women (9 conclusions); Vitamin B12 status and pregnant women (8 conclusions). The aim of the dissertation has been achieved. Contributions: Contributions of an original nature are 5 in number, related to the uniqueness of the study for our country. The contributions of a practical nature are 6 in number, related to specific guidelines for monitoring pregnancy among women from northeastern Bulgaria.
- Publications on the topic: The author presents 3 full-text publications related to the dissertation work and 6 participations in scientific forums.
- Abstract: The abstract follows the content of the dissertation work. It is prepared in a volume of 108 pages. It is composed of parts that faithfully represent the structure, content and exposition, conclusions, contributions and list of publications and participations in scientific forums related to the dissertation work. The material is sufficiently informative, adequately illustrated and technically perfectly formed.
- Critical remarks and recommendations: I have none. I wish Dr. Todorova to continue the development of her scientific career and academic growth.

### *CONCLUSION*

The dissertation work of Dr. Monika Todorova is presented in a fully completed and well-structured form. Meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its Application and the Rules for the Conditions and Procedures for Acquiring Scientific Degrees and Holding Academic Positions at MU-Varna. The necessary procedure has been followed. My personal contacts with Dr. Todorova allow me to say that she is an educated and responsible doctor and teacher with great potential for development.

Based on what has been written, taking into account the topicality and importance of the topic, the volume and the way of conducting the scientific research, the processing of the material, the results shown, the conclusions and the contributions, I declare to the

members of the Dear NJ that I am convinced to vote "FOR" (positively) the award to Dr. Monika Todorova Toshkova of the ONS "Doctor" in the scientific specialty "Clinical Laboratory".

24.04.2023

City. Sofia

Prepared the Opinion:   
(Prof. Dr. Margaritka Boncheva, PhD)