

REVIEW

from Prof. Tatyana Ivanova Vlaykova, PhD

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Scientific specialty: "Biochemistry",

Professional field: 4.3. Biological sciences.

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Regarding: the procedure for the Academic position of "**Associate Professor**" in the scientific specialty **Biophysics**, professional field 4.3. Biological sciences, field of higher education 4. Natural sciences, mathematics and informatics

1. Information about the procedure

The procedure, announced for the needs of the Department "Biochemistry, molecule biology and nutrigenomics", Faculty of Pharmacy, Medical University "prof. Dr Paraskev Stoyanov", was published in the State Gazette, - no. 7/23.01.2024.

2. Brief information about the candidates in the competition

The only candidate in the competition is Head Assistant Professor Deyana Georgieva Vankova, PhD. The candidate's documents are very well organized and arranged and are in full compliance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Development of the Academic Staff at the University of Varna.

In 2002, Head Assistant Professor Vankova received a bachelor's degree in "Molecular Biology" with the professional qualification "Biologist - Molecular Biologist", and in 2004 she received a Master's degree in "Molecular Biology" with the professional qualification "Molecular Biologist in Animal and Human Physiology" at Faculty of Biology of Sofia University "St. Kliment Ohridski".

In 2015 after a successful defense of the PhD thesis on the topic "Study of the role of genetic factors and lifestyle in the appearance of obesity and metabolic syndrome in Bulgarian population", she received a PhD in "Biochemistry" at the Medical University of Varna. In the same year, she acquired a specialty "Biochemistry", recognized with a Certificate issued by the Medical University "Prof. Dr. P. Stoyanov", Varna

The professional career of Deyana began in 2004 as a medical representative at "Chaikapharma" Ltd, then she continued as a laboratory specialist at SZhS-Bulgaria Ltd., from 2009 she was assistant professor in Biochemistry at the Medical University of Varna, Faculty of Pharmacy, Department of Biochemistry, Molecular Medicine and Nutrigenomics and since 2016 "she has been working as Head Assistant Professor at the same department.

According to the reference from the "Human Resources" Department of the Faculty of Pharmacy, MU-Varna, Head Assistant Professor Vankova has over 19 years and 5 months of work experience in the specialty.

In addition to her main engagements as a member of the academic staff Head Ass. Prof. Vankova also performs administrative activities - since 2016 she is the chief administrative assistant of the Department of Biochemistry, Molecular Medicine

and Nutrigenomics and is a member of the Faculty Council of the Faculty of Pharmacy, MU Varna. Head Ass. Prof. Vankova is a member of the Union of Scientists in Bulgaria, Biochemistry, Biophysics and Molecular Biology section (member of FEBS); The Union of Scientists - Varna, Bulgaria; The European Nutrigenomics Organization (NuGO) and the Association of Biochemical Departments in Bulgaria (ABKB).

Deyana Vankova is fluent in English, which gives her the opportunity to conduct practical exercises for students taught in English.

There is no information presented about courses and specializations for increasing her qualifications, expand her scientific interests and acquire new practical skills, although, according to my personal impressions, she has several such.

3. Completion of the requirements for obtaining the academic position "Associate Professor".

In the procedure for the academic position "Associate Professor" Head.Ass. Prof. Vankova participates with a monograph, with the value of a habilitation thesis, with 14 publications, in journals, referenced in Scopus and/or in Web of Science (8 with IF; Total IF=19.822), 2 chapters of monographs and other 3 Head Ass. Prof. Vankova also presented a list of 8 publications included in the procedure for the academic position "Head Assistant Professor" and another 3 publications included in the PhD thesis.

In addition, Deyana Vankova has included in the documents a list of attendees in scientific forums, of which 9 are at international scientific forums and 13 at scientific forums in Bulgaria.

When reviewed in Scopus, Deyana Vankova's profile is associated with over 74 citations (probably also auto-citations) and a citation Hirsh index of 5 (h-index, according to SCOPUS).

The presented Academic report for the fulfillment of the Minimal National Requirements shows that Deyana Vankova covers the required points for indicators A, B, G and D

<i>Indicators' groups</i>	<i>Indicators</i>	<i>Required points</i>	<i>Head Assistant. Professor Deyana Vankova</i>
A	1. PhD thesis	50	50
B	4. Monograph "Role of some adipokines in the pathogenesis of socially significant diseases", 2024	100	Общ брой =100
G		200	255
	Г7. Scientific publications WoS/Scopus		1 x25 (Q1) = 25 4 x 20(Q2) = 80 4 x15 (Q3) = 60 5 x12 (Q4) = 60
	Г8. Chapter of book or monograph		2 x 15 = 30
D	11. Citations(WoS/Scopus) (x2т)	50	27x2= 54

4. Assessment of the candidate's educational and teaching activities

Deyana Vankova began her academic and teaching experience in 2009, when she was selected through a competition as Assistant Professor in Biochemistry at the University of Varna, Faculty of Pharmacy, Department of Biochemistry, Molecular

Medicine and Nutrigenomics. She participates in conducting practical classes and some separate lectures in Biochemistry for students from various specialties taught in Bulgarian and English.

The documents do not provide information about the specific courses and specialties in which she leads the exercises. According to the reference from the Education Department, Deyana Vankova, in the last 5 years, Deyana's study load averaged 400 academic hours, of which an average of 250 hours were conducted in English.

To support the education of the students of medicine, dentistry and pharmacy, together with other colleagues from the department, Deyana participated in the preparation of 4 guide books, 2 of which are in English.

5. Brief description of the presented scientific papers

In her research work, Head Asst. Prof. Vankova continues and deepens the direction developed in her dissertation work - *"Research of biomarkers in socially significant diseases"*, such as obesity and metabolic syndrome. Later, research in this area was expanded to include patients with cardiovascular pathologies as well as healthy people practicing yoga.

Another direction in Deyana Vankova's scientific interests is *"Investigation of the antioxidant and anti-inflammatory properties of medicinal plants and biologically active substances in cell cultures, experimental animals and humans"*. This direction is the main one developed in the department under the leadership of Prof. Diana Ivanova.

The studies conducted by Deyana Vankova are carried out with the financial support of a significant number of research projects, in which she is a member of the scientific teams. She participated in a project funded by the 7th FP of the European Union - GA 289511; 4 projects with national funding from the "Scientific Research" Fund and in 5 projects funded by the Fund "Science" at the Varna University.

6. Brief evaluation of the candidate's main scientific and scientific-applied contributions

The monograph presented in Criteria B, entitled *"Role of Some Adipokines in the Pathogenesis of Socially Important Diseases"*, is an in-depth review paper providing comprehensive information on the new understanding of the role of adipose tissue as an active and dynamic tissue secreting a wide variety of regulatory factors, having a fundamental role in the control of metabolic and physiological processes in the body. The scientific information on the structure, regulation of synthesis and secretion, gene variants, receptors, signaling pathways and the biological role of five of the most important adipokines: leptin, adiponectin, resistin, visfatin and retinol-binding protein 4 is presented in an extremely detailed, systematized and thorough manner. A large body of scientific data on the functional polymorphisms in the genes of the described adipokines and their receptors, as well as the role of the carrier of some of these polymorphisms in the appearance of obesity and related clinical manifestations, are presented in details. In this part Head Ass. Prof. Vankova also includes her own results, described in the dissertation and in a related to the thesis publication, with IF.

An important focus of the monograph is the review of scientific information on the involvement of these adipokines in the inflammatory response and metabolic disorders accompanying some socially significant diseases such as obesity, cancer and

cardiovascular diseases, as well as the complex interrelationships between different types of physical activity and changes in adipokine levels.

Deyana Vankova's monographic work is a thorough and systematic review of the scientific literature on the topic, written in clear and precise scientific language, illustrated with author's figures, and contributes to the overall understanding of the role of adipose tissue and the regulatory molecules secreted by it in the development and progression of various socially significant diseases. It can serve as an educational material for undergraduate students and PhD students and for a large group of specialists in Bulgaria working in the field of adipobiology.

A substantial part of the publications presented in the procedure (G7.6, G7.7, G7.8, G7.9, G7.12, G7.14, G8.2) are part of the first scientific step "Research of biomarkers in socially significant diseases". When analyzing the serum levels of two indicators of oxidative stress and endothelial dysfunction, malondialdehyde (MDA) and asymmetric dimethylarginine (ADMA), as well as the mRNA level expression of NF-kB, Nrf2, and HO-1 in peripheral blood mononuclear cells of 30 patients with metabolic syndrome and 14 control individuals, Deyana Vankova and colleagues have found significantly increased levels of all investigated markers in the patients compared to the levels in the controls.

These results and the proposed scheme for the cellular-molecular mechanisms of the endothelium protection in metabolic syndrome lead to the derivation of a scientific-applied contribution to the possibility that biomarkers such as Nrf2, NF-kB, HO-1 and ADMA can be used to evaluate endothelial dysfunction in clinical practice.

Several of the publications in this area of interests focus on the role of Vitamin-K and vascular calcification in cardiovascular disease. From the cross-sectional studies conducted, results were obtained leading to several confirmatory contributions. Evidence has been obtained that vitamin D deficiency may be an independent cardiovascular risk factor associated with the severity of cardiovascular pathology and increased coronary calcium deposition. It has also been found that decreased expression in peripheral mononuclear cells of one of the important inhibitors of calcification, matrix Gla protein, is associated with obesity and dyslipidemia, and the circulating uncarboxylated matrix Gla protein correlates with the degree of coronary artery calcium deposits in patients with cardiovascular diseases.

The results describing a positive relationship between the intake of statins and vascular calcification are also a confirmatory contribution. These results can reveal, to some extent, the possible mechanisms by which statins affect the accumulation of calcium in the arterial wall,

The identified cyanoprokaryotes from various water dams in Bulgaria are original contribution, while the studies of the influence of their cytotoxins on a human skin cell line confirm the possibility that cyanoprokaryotes and their metabolites can be considered a risk factor for animals and human health.

Another significant part of Deyana Vankova's publications includes results of studies of the antioxidant and anti-inflammatory properties of medicinal plants and biologically active substances in cell cultures, experimental animals and in humans. There are proven the cytoprotective effect of a total extract and hydrophilic and anthocyanin fractions of *Sambucus ebulus* L., the anti-inflammatory effect of an extract of *Agrimonia eupatoria*, the induction by uric acid of an antioxidant cellular response, and the stimulation of cell proliferation under the action of the homeopathic agent Ferrum phosphoricum D12.

With the studies with experimental animals, Deyana Vankova proved that the intake of an aqueous extract of the herb *Agrimonia eupatoria* improved total cholesterol and triglyceride levels in Wistar rats and modulated gene expression in adipose tissue. The intervention with healthy volunteers who consume sulfur-containing mineral waters from the Varna region has led to original results of a contributing nature, proving a significant increase in serum levels of total glutathione and thiols and increased gene expression of the antioxidant enzyme γ -glutamyl-cysteinylligase.

7. Critical remarks and recommendations

I have no critical remarks about the candidate for Academic position "Associate Professor" Head Ass. Prof. Deyana Vankova, but I would allow myself to recommend Deyana to be more active as a leading author of the articles and scientific reports that will be created and published in the future.

CONCLUSIONS:

In the procedure for the academic position "Associate Professor" in the field of higher education 4. Natural sciences, mathematics, and informatics, professional direction 4.3. Biological Sciences, and scientific specialty "Biochemistry, documents has submitted Head Ass. Prof. Deyana Georgieva Vankova, PhD.

The official documents submitted for Deyana Vankova's research activity show that she is a hardworking and consistent young scientist, and the evidence of her teaching activities outline her as an experienced university teacher.

Having in mind everything highlighted above regarding the teaching activity, scientometric indicators, scientific contributions, and personal qualities of the Head Ass. Prof. Deyana Vankova, as well as taking into account the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Development of the Academic Staff at Medical University of Varna for the acquisition of the academic position "ASSOCIATE PROFESSOR", I am fully convinced to give my positive opinion. In my capacity as a member of the Scientific Jury for the announced procedure, I recommend the respected members of the Scientific Jury to vote positively for the awarding of Head Ass. Prof. Deyana Vankova, PhD to the academic position "ASSOCIATE PROFESSOR" in the scientific specialty "Biophysics",

27.05.2024, Stara Zagora

Member of the Jury:

/Prof. Tatyana Vlaykova, PhD/

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