

## REVIEW

by Prof. Yoana Dimitrova Kiselova-Kaneva, PhD

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**Subject:** Competition for the academic position "Associate Professor" in "Biochemistry", announced for the needs of the Department of "Biochemistry, Molecular Medicine and Nutrigenomics", Faculty of Pharmacy at the Medical University "Prof. Dr. P. Stoyanov", Varna.

### Competition data

According Order No. R-109-119/22.03.2024 of the Rector of the Medical University "Prof. Dr. P. Stoyanov" - Varna, I was elected as a member of the Scientific Jury, and with protocol No. 1 of the first meeting of the Scientific Jury, I was appointed to prepare a statement in connection with the procedure for occupying the academic position "Associate Professor" in the scientific specialty "Biochemistry" ", field of higher education 4. Natural sciences, mathematics and informatics, professional direction 4.3. Biological sciences under a competition announced in State Gazette No. 07/23.01.2024 for the needs of the Department of "Biochemistry, Molecular Medicine and Nutrigenomics", Faculty of Pharmacy at the Medical University "Prof. Dr. P. Stoyanov" - Varna, with the only candidate in the competition chief assit. prof. Deyana Georgieva Vankova, PhD from the same Department. The review of the documents shows that all necessary materials have been submitted and they fully meet the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its Application at the Medical University - Varna.

### Biographical data

Chief Assistant Professor Deyana Georgieva Vankova, PhD graduated with a bachelor's degree in "Molecular Biology" and professional qualification Biologist - Molecular Biologist at Sofia University "St. Kliment Ohridski" in 2002, and in 2004 - as a master's degree in "Molecular Biology" with a professional qualification as a molecular biologist in animal and human physiology. Deyana Georgieva Vankova acquired specialization in Biochemistry in 2015.

He began his professional career as a medical representative at "Chaikapharma - high-quality drugs" Ltd in 2004. In the period 2004-2008, he was a laboratory specialist at SGS - Bulgaria Ltd. In 2009, he won a competition for an Assistant Professor in "Biochemistry" at the Department of Biochemistry, Molecular Medicine and Nutrigenomics, Medical University - Varna, and since 2016 he has been the chief administrative assistant in the same Department.

### **Research activity**

Ch. Assistant Professor Deyana Georgieva Vankova, PhD, was enrolled as a full-time PhD student in 2008 and defended her PhD thesis in 2015 at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna with the topic of the dissertation work "*The role of genetic factors and lifestyle relationship to obesity and metabolic syndrome in a sample of Bulgarian population*". Thus, in area 4. Natural sciences, mathematics and informatics, the candidate has the required 50 points on Indicator A1 of the scientometric indicators for the occupation of the academic position "Associate Professort".

From the provided reference for the contributions of the scientific works of Ch. Assistant Professor Deyana Vankova, PhD, it is visible that the scientific and research activities are in the following main directions:

1. Study of biomarkers in socially significant diseases;
2. Study of the antioxidant and anti-inflammatory properties of medicinal plants and biologically active substances *in vitro* and *in vivo*.

In direction 1. ***Research of biomarkers in socially significant diseases*** Ch. Assistant Professor Deyana Georgieva Vankova, PhD, has conducted studies on the expression of indicative genes in peripheral mononuclear cells (PBMC) and concentration of plasma indicators. Changes in the expression of Nrf2, NF-kB and HO-1 in metabolic syndrome were investigated in relation to indicators of oxidative stress and endothelial dysfunction. In another study, the expression levels of the matrix Gla protein in PBMC were analyzed, where the hypothesis that its expression reflects cardiovascular pathologies and is associated with impaired regulation of lipid metabolism was confirmed. In addition, circulating levels of non-carboxylated matrix Gla protein may be associated with certain stages of cardiovascular disease and the calcium score. Serum levels of GRP and uncarboxylated matrix Gla protein have been investigated in patients with coronary calcium deposits and a relationship with LDL levels has been demonstrated. Studies on plasma levels of vitamin D have shown that its deficiency may be an independent cardiovascular risk factor associated with the severity of cardiovascular pathology and increased coronary calcium deposition. Evidence for a positive correlation between statin intake and vascular calcification

levels has been obtained, elucidating some possible mechanisms by which statins may improve calcium accumulation in the arterial wall, namely by inhibiting vitamin K-dependent proteins and functions involved in blood vessel protection.

A study on the importance of algotoxins as a health risk factor was carried out, where samples from water bodies, where the presence of cyanoprokaryotes was proven, were tested for cytotoxicity in cell cultures. Data from the experiments have confirmed the thesis that cyanoprokaryotes and their metabolites can be considered a risk factor for the health and life of animals and humans.

In direction *2. Research of the antioxidant and anti-inflammatory properties of medicinal plants and biologically active substances in vitro and in vivo*, Deyana Vankova's scientific works contain data mainly from work with cell culture models and experimental animals.

Data were obtained on the cytoprotective properties of an extract and different fractions of the fruits of the elderberry plant (*Sambucus ebulus* L.). in the J774A.1 macrophage cell line. In 3T3-L1 preadipocyte cell line, it was found that the extract of agrimony (*Agrimonia eupatoria*) has adaptogenic properties and anti-inflammatory action by reducing the expression levels of some inflammatory factors. In experimental animals (Wistar rats), the application of this herb in a model of induced metabolic disorders improves the lipid profile and modulates gene expression in adipose tissue in the direction of reduced synthesis and deposition of triglycerides.

The healing properties of the mineral water from the Varna basin were investigated, where the changes in some biochemical indicators, including markers for oxidative stress, were analyzed. As a result of prolonged intake of such water, significantly increased plasma levels of total glutathione and total thiols and increased expression of antioxidant enzymes in PBMC were found.

Data were obtained on the influence of pathophysiological concentrations of uric acid as an inducer of the antioxidant cellular response in the J744A.1 mouse macrophage cell line.

The compound 5-ethyl-5-methyl-4-bromo-2-N-butylamido-2,5-dihydro-1,2-oxophosphole-2-oxide was tested for cytotoxicity and effect on the expression of antioxidant enzymes in cell culture. The results of these studies, as well as the physicochemical characterization of the compound, are important for the development of new drugs.

### **Publication activity**

In the current competition for "Associate Professor" Ch. Assistant Professor Deyana Vankova has presented an academic reference, which contains one monograph of which she

is an independent author (Indicator B3=100 points), 14 articles in full text, published in scientific journals, referenced and indexed in world- renowned databases with scientific information ( Web of Science and/or Scopus) in journals with an impact factor (Indicator Г7), one book chapter in an edition referenced and indexed in Web of Science and Scopus and one monograph as a co-author (Indicator Г8).

All publications from indicator Г-7 are from the last 5 years, which I regard as a serious request for active research activity. The publications are also the result of the implementation and successful completion of several nationally funded scientific projects in which Deyana Vankova takes part. In 6 of the scientific publications (43%), Ch. Assistant Professor Deyana Georgieva Vankova is the first or second author, which is an indicator of her significant contribution. Also, beyond the minimum scientometric requirements, the candidate indicates three additional publications in journals indexed by secondary databases, two of which she is the first author of. In addition, Ch. Assistant Professor Vankova has participated in numerous scientific forums in the country and abroad.

The citation index (h-index) of the candidate is 5 according to SCOPUS (<https://www.scopus.com/authid/detail.uri?authorId=55579339800>) and 7 according to Google Scholar ([https://scholar.google.bg/citations?hl=en&user=oxoyO7kAAAAJ&view\\_op=list\\_works&sortby=pubdate](https://scholar.google.bg/citations?hl=en&user=oxoyO7kAAAAJ&view_op=list_works&sortby=pubdate)).

The total number of points from the publications presented in the reference for fulfilling the minimum national requirements for the academic position "Associate Professor" in Criterion Г is 255, meeting and exceeding the minimum requirement of 200 points from indicators Г5-Г10.

The presented report shows that at the time of submission of the documents, there were 27 citations of the scientific production by independent research groups (Indicator Д11=54 points).

### **Teaching activity**

To date Ch. Assistant Professor Deyana Georgieva Vankova has over 15 years of teaching experience with over 360 hours of annual classroom workload for the last 5 years. She led exercises and lectures to students with teaching in Bulgarian and English.

As part of the educational and teaching activity, Ch. Assistant Professor Deyana Georgieva Vankova is a co-author of four textbooks on biochemistry for students in Medicine (English), Dentistry (Bulgarian and English) and Pharmacy.

In summary, the scientometric indicators of Ch. Assistant Professor Deyana Georgieva Vankova for participating in the current competition are reflected in the following table:

| Criterion | Content   | Minimal scientometric „Associate Professor“ (number points) | Deyana Georgieva Vankova |
|-----------|---|---|--------------------------|
| A         | Indicator A1: PhD thesis to acquire of the educational and scientific degree of PhD | 50  | 50                       |
| B         | Indicator B3 or B4: Habilitation thesis – <b>monography</b>                         | 100   | 100                      |
| Г         | Sum of indicators Г5-Г10  | 200   | 255                      |
| Д         | Indicator Д11   | 50  | 52                       |

### CONCLUSION

In conclusion, according to the materials and documents presented to me for review, I believe that the scientific interests and contributions of Ch. Assistant Professor Deyana Georgieva Vankova, PhD are in accordance with the profile of the announced competition. All mandatory requirements for scientometric indicators laid down in the currently effective Law for the Development of the Academic Staff of the Republic of Bulgaria and the Regulations for the Development of the Academic Staff at the Medical University "Prof. Dr. P. Stoyanov", Varna.

Based on the performance of the mandatory scientometric indicators, as well as my general assessment of her research and teaching activities, I believe that Ch. Assistant Professor Deyana Georgieva Vankova, PhD meets all the requirements for holding academic position "Associate Professor", reflected in the above-mentioned normative documents. All this gives me the reason to give my positive assessment and with conviction to recommend to the Honorable Members of the specialized Scientific Jury to award her the academic position "Associate Professor" in the scientific specialty "Biochemistry", in the professional direction 4.3. Biological Sciences, for the needs of the Department of Biochemistry, Molecular Medicine and Nutrigenomics at the Faculty of Pharmacy of the Medical University "Prof. Dr. Paraskev Stoyanov", Varna.

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Varna

REVIEWER:

/Prof. Yoana Kiselova-Kaneva, PhD/

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