

REVIEW

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Member of Scientific Jury defined with Order No P-109-359/21.09.2022 г. of the Rector of Medical University “Prof. D-r Paraskev Stoyanov”, Varna.

Subject: Award of the academic position „**Profesor**“ in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.3. Biological sciences, and in scientific specialty „**Biochemistry**“, for the needs of Department of Biochemistry, Molecular Medicine and Nutrigenomics, Faculty of Pharmacy, Medical University – Varna, according to an announcement in the State Gazette, No 59 от 26.07.2022 г.

I was provided with the documentation of a single candidate in the announced competition – Assoc. Prof. Yoana Dimitrova Kiselova-Kaneva. All of the needed documents have been provided by the candidate according to the Law for the development of the Academic Staff in the Republic of Bulgaria and the Rules for the Development of the Academic Staff of the Medical University “Prof. D-r P. Stoyanov”, Varna.

Biographical data

Yoana Dimitrova Kiselova-Kaneva graduated in 1999 from Plovdiv University "Paisii Hilendarski" with a Master's degree in "Biology", specialization in "Genetics and Cell Biology". From 2000 to 2004, she worked at the Institute of Genetics "Acad. Doncho Kostov", Sofia, Bulgarian Academy of Sciences, holding the position of research assistant III degree. Since 2004, she had been a full-time PhD student in Biochemistry at the Department of Preclinical and Clinical Pharmacology, Chemistry and Biochemistry at the Medical University "Prof. Dr. Paraskev Stoyanov" Varna. In 2006, she was appointed as an assistant in Biochemistry in the same department, in 2009 she held the position of senior assistant, and in 2011 - chief assistant. He acquired the specialty "Biochemistry" in 2009. Her PhD thesis she defended in 2011. Since 2013, she has held the academic position Associate Professor, and from 2016 to the present, she is head of the Department of Biochemistry, Molecular Medicine

and Nutrigenomics at the Medical University - Varna. From 2017 to the present, she is head of the Scientific Department "Nutrition and Quality of Life" and of the Scientific Group "Nutrigenomics and Personalized Nutrition" in the same department. During her professional career, she attended a number of courses and specializations.

Research activity

Yoanna Kiselova-Kaneva defended her PhD thesis in 2011 at the Medical University "Prof. Dr. Paraskev Stoyanov", Varna and the title of the thesis is "*Study of the antioxidant activity of Bulgarian medicinal plants.*" Thus, in field 4. Natural sciences, mathematics and informatics, the candidate has the necessary 50 points under Indicator A1 of the scientometric indicators for occupying the academic position "Professor".

Contributions of the research articles of Assoc. Prof. Yoana Kiselova-Kaneva are in the following areas:

1. Biological activity, composition, metabolism and safety of natural raw materials, food additives and synthetic molecules.
2. Study of molecular markers in search of new diagnostic and prognostic approaches.
3. Development and adaptation of new preparatory and analytical methods.

In area 1. "**Biological activity, composition, metabolism and safety of natural raw materials, food additives and synthetic molecules**", Assoc. Prof. Yoana Kiselova-Kaneva has 11 publications. Most of them are dedicated to the medicinal plant *Sambucus ebulus* L.. The fruits of the plant are used in folk medicine as an immune-strengthening agent. However, their chemical content and biological activity are poorly studied, and data on their anti-inflammatory and/or immunomodulating properties are scarce. In this regard, scientific works contribute to elucidating the content of a number of biologically active compounds in elderberry fruit extracts, more than 90 of which are reported for the first time. Compared with data of other authors, the obtained results show a higher content/g dry weight of most of the investigated compounds, compared to closely related species. These results could be of interest for the purification of the corresponding compounds from natural raw materials or for the application of elderberry fruits and/or extracts as ingredients in foods, food supplements, medicinals, etc. Data on the biological activity of *S. ebulus* fruit extracts in cell cultures were obtained by investigating the effect on the expression of genes related to the inflammatory response, antioxidant defense and endoplasmic reticulum stress. It has been established that there is a regularity in the manifestation of this activity, depending on whether there is presence/absence

of subsequent oxidative/proinflammatory provocation on the cells. For the first time, a cytoprotective effect of *S. ebulus* fruit extracts was established, which was expressed in the reduction of the toxic effect of tertiary butyl hydroperoxide in macrophage cell culture (J774A.1) and of ethanol in 3T3-L1 preadipocytes.

Another part of Assoc. Prof. Kiselova-Kaneva's scientific works is dedicated to water research. Some metabolic effects of sulphur-containing mineral waters from the Varna Basin were found, namely on parameters such as plasma levels of total thiols and glutathione, and gene expression in peripheral mononuclear cells in healthy volunteers. In analyzes of water collected during flowering from reservoirs with variable applications and from different regions of Bulgaria, it can be seen that their toxic effect on the vitality of skin fibroblasts *in vitro* corresponds to the data from taxonomic studies on the presence of toxigenic species of cyanoprokaryotes and on the presence of cyanotoxins in them. Some hitherto unexplored mechanisms of cylindrospermopsin toxicity have been reported.

The rest of the scientific works in this area contribute to the clarification of some protective mechanisms of action of substances such as melatonin and *Ferrum phosphoricum*. In part of the research, *in silico* modeling of metabolism and biological activity of a new compound (5-Ethyl-5-methyl-4-bromo-2-N-butylamido-2,5-dihydro-1,2-oxaphosphol-2-oxide, Br-oxph-1) have been performed, and the research is aimed at developing new biologically active compounds, including drugs. In this direction, the antioxidant activity of newly synthesized bexarotene derivatives has been also investigated.

In area 2 "Research of molecular markers in search of new diagnostic and prognostic approaches", Assoc. Prof. Yoana Kiselova-Kaneva has 15 publications. These works contribute to establishment of plasma levels and expression of matrix Gla-protein and vitamin D status in patients with cardiovascular diseases. In children with pyelonephritis, some markers in saliva have been studied, in order to evaluate their applicability as diagnostic ones. Part of the research is in connection with the search for markers of metabolic adaptation and it has been found that the analysis of the corresponding metabolic profile in a fasting blood sample can allow early identification of pre-diabetic subjects at risk of insulin resistance without the need to undergo an oral glucose tolerance test. In patients with type 2 diabetes, with obesity and on metformin therapy, data were obtained on secretion levels of sulfated glycosaminoglycans.

In area 3 "Development and adaptation of new preparative and analytical methods", contributions consist in a developed chromatographic method for measurement of some

compounds in plant extracts and in the development and improvement of a method for the extraction of RNA from paraffin sections, which is in connection with providing satisfactory quality of isolated material used for gene expression analysis.

Prof. Yoana Kiselova-Kaneva is a participant in eleven scientific projects - one international and ten national, three of which she is the leader of (Indicators E14, E15, E16 and E18).

Publication activity

According to Criterion B, for her participation in the current competition, Assoc. Prof. Yoana Kiselova-Kaneva has submitted 6 (six) publications, which are in Indicator B4 - equivalent to a habilitation thesis (Habilitation thesis = scientific publications in publications that are refereed and indexed in world-famous databases of scientific information (Web of Science and Scopus)). The total number of points under Criterion B is 101. In this way, the minimum and mandatory requirement of 100 points under Criterion B is fulfilled.

According to Criterion Γ , a total of 20 scientific papers are presented in the documentation - 18 scientific publications, referenced and indexed in world databases with scientific information (Web of Science and Scopus) (indicator Γ 7) and two book chapters (indicator Γ 8). The total number of points from the publications presented in the reference for the fulfillment of minimum national requirements for the academic position "Professor" in Criterion Γ is 317, meeting and exceeding the minimum requirement of 200 points from indicators Γ 5- Γ 10. In addition, the candidate has submitted 4 other publications, beyond the minimum scientometric requirements for holding the Academic Degree "Professor".

According to the prepared academic reference, the total impact factor (IF) of the journals in which Prof. Joanna Kiselova-Kaneva has publications is 71.878.

To participate in the competition, Yoana Kiselova-Kanevae has submitted evidence for a total of 50 citations, covering the minimum requirements for occupying academic degree "Professor" and another 35 outside the minimum requirements. According to Indicator Δ 11, Assoc. Prof. Kiselova-Kaneva has a total of 86 citations (172 points).

Teaching activity

Yoana Kiselova-Kaneva has teaching experience as an assistant (2 years 6 months and 24 days), senior assistant (2 years 00 months and 17 days), chief assistant (2 years 7 months and 8 days) and associate professor (more than 8 years) in the Department of Biochemistry, Molecular Medicine and Nutrigenomics at the Medical University - Varna.

In her teaching activity, Assoc. Prof. Yoana Kiselova-Kaneva led lecture courses in the Biochemistry discipline - for students from the specialties of Dental Medicine (teaching in Bulgarian and English) and Pharmacy, and in the Biochemistry and Pathobiochemistry discipline for students from the Medical Laboratory Technician specialty. For students majoring in Pharmacy, she leads a lecture course on the free-elective discipline "Biological role, mechanism of action and pharmacological application of macronutrients and their salts". With individual lectures, she participated in the teaching of the disciplines Pharmacognosy for the specialty Pharmacy, Research Technologies for the specialty Transfer of Technologies and Innovations in Pharmacy, Molecular Biology in Medicine (teaching in Bulgarian and English) for the specialty Medicine, and Molecular Biology in Pharmacy for the specialty Pharmacy. She also participated in the practical classes for students of the specialties of Medicine, Dental Medicine and Pharmacy. The study load of Yoana Kiselova-Kaneva is more than 100 hours per year on average for the last 4 years.

Assoc. Prof. Yoana Kiselova-Kaneva is the independent supervisor of two doctoral students - Neshe Ferahova Nazifova-Tasinova and Miglena Nikolaeva Todorova with the titles of their PhD theses, respectively *"Identification of biomarkers for the assessment of phenotypic plasticity with application in nutrition science"* and *"Obtaining of anthocyanins-rich extract from elderberries (Sambucus ebulus) and characterization of its biological activity with respect of their use as a raw material in the production of foods and medicinal products"*. Thus, the mandatory condition of 100 points under Indicator E13 is satisfied.

The candidate is a co-author of four teaching aids for students of Medicine, Dental Medicine and Pharmacy (Indicator E20).

In a summary, the scientometric indicators of Assoc. Prof. Yoana Kiselova-Kaneva for the participation in the current competition are reflected in the following table:

Criterion	Content	Minimal scientometric „Professor“ (number points)	Yoana Dimitrova Kiselova-Kaneva
A	Indicator A1: PhD thesis to acquire of the educational and scientific degree of PhD	50	50
B	Indicator B3 or B4: Habilitation thesis – monography	100	101

Г	Sum of indicators Г5-Г10	200 (≥ 80 from indicator 7)	317 (287)
Д	Indicator Д11	100	172
Е	Sum of indicators E12-E20	150 (≥ 100 from indicator 13)	267,83 (100)

CONCLUSION

In conclusion, according to the materials and documents I was provided for a review, I believe that the scientific interests and contributions of Associate Professor Yoana Dimitrova Kiselova-Keneva are in accordance with the profile of the announced competition. All the mandatory requirements for scientometric indicators laid down in the currently effective Law for the Development of 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", city of Varna are fulfilled, and in some cases – exceeded.

Based on the fulfillment of the mandatory scientometric indicators, as well as my general assessment of her teaching and scientific contributions, I consider that Associate Professor Yoana Kiselova-Kaneva meets all the requirements for holding the academic degree "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 "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.

November 17, 2022
Plovdiv

Member of Scientific Jury:



/Prof. Rumen Mladenov, PhD/