

REVIEW

by Prof. d. b. n. Ivan Nikiforov Minkov
Institute of Molecular Biology and Biotechnology, Plovdiv
of the materials submitted for participation in the competition
to occupy the academic position "professor"
at Medical University – Varna,

by: field of higher education: 4. Natural sciences, mathematics and informatics, professional direction: 4.3. Biological Sciences, major: Biochemistry

In the competition for "professor", announced in the State Gazette, no. 59 of 26.07.2022 and on the website of the Medical University, Varna for the needs of the Department of "Biochemistry, Molecular Medicine and Nutrigenomics", at the Faculty of Pharmacy, Prof. Yoana Dimitrova Kiselova-Kaneva participated as a candidate from the same department.

1. General presentation of the received materials

Subject:

By order No. R-109-359/21.09.2022 of the rector of the Medical University "Prof. Dr. Paraskev Stoyanov" - Varna, (MUV) I have been appointed as a member of the scientific jury of a competition for the academic position of "professor" in the MUV area of higher education: 4. Natural sciences, mathematics and informatics, professional direction: 4.3 Biological sciences, specialty: biochemistry, announced for the needs of the Department of "Biochemistry, Molecular Medicine and Nutrigenomics", at the Faculty of Pharmacy, MUV.

Only one candidate submitted documents for participation in the announced competition: Assoc. Prof. Dr. Yoana Dimitrova Kiselova-Kaneva from the same department.

The set of electronic materials presented by Yoana Dimitrova Kiselova-Kaneva is in accordance with the Regulations for the Development of the Academic Staff of the Ministry of Education, and includes the following documents:

1. Application to the Rector for admission to participation in the competition.
2. Creative CV with the applicant's signature (word and pdf).
3. A certified true copy of the Master's degree with the annex to it.
4. A certified true copy of a diploma for an acquired ONS "doctor".
5. Certified copy of a diploma for the academic position "docent".
6. A certified copy of a document for the acquired specialty "biochemistry".
7. Certificate of internship in the relevant specialty.
8. Certificate of teaching experience.
9. Certificate of supervision of successfully defended doctoral students.
10. Reference study load.
11. Medical certificate.
12. Criminal record certificate.
13. Notice on protection of personal data.
14. Declaration of authenticity of presented documents, completed, and signed by the candidate.
15. Academic certificate issued by the library of MU-Varna, including:
 - Publications and citations covering the minimum national requirements.
 - Full-text publications and citations, beyond the minimum scientometric requirements.
 - List of scientific works and citations, used for the acquisition of the PhD, as well as for the occupation of previous academic positions ("principal assistant" and "associate professor").

- Application for active profiles in Google Scholar and ORCID (as well as other profiles in scientific networks, e.g. Research Gate).
 - Application for Impact Factor.
16. Publications equivalent to a monograph/habilitation thesis.
 17. Certificate of participation in international and national projects financed by the "Scientific Research" Fund.
 18. Certificate of participation in national projects financed by the "Science" Fund at MU-Varna.
 19. Copies of title pages of textbooks.
 20. Summaries of scientific works in Bulgarian and English.
 21. Reference for the original scientific contributions, signed by the candidate (word and pdf).
 22. List of participations in national and international scientific events.
 23. Others – Copies of conducted trainings; Certificate of participation as a lecturer.

The candidate Yoana Dimitrova Kiselova-Kaneva has submitted a total of 26 publications, and from group B4 6 scientific publications are presented in publications that are referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus); 18 scientific publications are from group G7 - in publications referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus), as well as 2 publications from group G8 - a published chapter of a book or a collective monograph.

As indicator D11, a total of 86 citations in scientific publications, monographs and collective volumes and patents, referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus) are presented for the mentioned publications.

Also presented are 4 publications from group E20 - university and teaching aids or teaching aids that are used in the school network. All 26 scientific works that are outside the dissertation and the four study aids are accepted for review.

Also presented are seven participations in national scientific or educational projects (indicator E14) - from the "Science" fund of the Ministry of Education, one participation in an international research project (indicator E15) - 7th framework program of the EC (FP7), as well as two national scientific or educational projects led by her (indicator E16) - from the "Science" fund of the Ministry of Education.

Funds raised for projects managed by the candidate in the total amount of BGN 120,000 are also indicated.

2. Brief biographical data (of the applicant/s)

Currently, Yoana Dimitrova Kiselova-Kaneva is an associate professor, Doctor of Biology and Head of the Department of "Biochemistry, Molecular Medicine and Nutrigenomics" at the Faculty of Pharmacy, MUV. She completed her higher education at the Paisii Hilendarski University of Plovdiv in a master's program in biology, specializing in genetics and cell biology. After university, in the period 2000-2004, she worked as a research assistant at the Institute of Genetics of the Bulgarian Academy of Sciences, Sofia.

In the period 2004-2011, she was a full-time and then a freelance doctoral student on independent training, initially in the Department of Preclinical and Clinical Pharmacology, Chemistry and Biochemistry, and later, mainly in the newly formed Department of Biochemistry, Molecular Medicine, and Nutrigenomics to the MUV. In 2011, she defended a dissertation for obtaining the scientific and educational degree "doctor", on the topic "Study of the antioxidant activity of Bulgarian medicinal plants" under the supervision of Prof. DSc. Diana Ivanova and Assoc. Prof. Dr. Tatiana Yankova.

During this period, she started working at the Moscow State University, in the department of pre-clinical and clinical pharmacology, chemistry and biochemistry, successively being an assistant, senior

assistant and chief assistant (2006-2013) - initially in the mentioned department, and later in the newly formed Department of Biochemistry, Molecular Medicine and Nutrigenomics. In 2013, she became an associate professor in the new department and has been its head since 2016.

In 2009, candidate Yoana Kiselova received a specialization in biochemistry from the MUV.

As can be seen, the predominant part of her scientific biography, as well as her defended specialty and doctoral dissertation, are closely related to the subject of the announced competition.

As a small drawback of the candidate's scientific biography, I consider the omission of the institution of higher education in which the candidate completed her higher education, as well as the failure to mention the main teachers who have credit for her development - such as, for example, the supervisor of her dissertation, especially she means that this is a scientist who created the department and the entire "nutrigenomics" department at the Ministry of Education.

3. General characteristics of the candidate's activities

Evaluation of educational and pedagogical activity and preparation of the candidate

The main educational and pedagogical activity of Yoana Kiselova is in the field of the announced competition - lectures and practical classes in biochemistry. We can consider that the courses in biochemistry of different types of students at the Medical University (medicine, pharmacy, dental medicine) taught in Bulgarian and in English are to a large extent the personal work of the candidate, especially considering that she has published (in co-authorship) four textbooks - two practical manuals and two manuals on biochemistry in English, which, I suppose, make it much easier to teach the subject of "Biochemistry" at MUV.

The candidate has also given lectures on biochemistry and patho-biochemistry for medical laboratory workers, lectures on research technologies, as well as some freely chosen courses - molecular biology in medicine, molecular biology in pharmacy and biological role, mechanism of action and pharmacological application of trace elements and their salts, as well as lectures on pharmacognosy.

The candidate has also actively participated in the creation of the educational documentation for training at the Moscow State University and the Department of Biochemistry, Molecular Medicine, and Nutrigenomics, both in terms of curricula and curricula, some of which are her personal work.

Yoana Kiselova participated in the training and supervised students during her entire presence at MMU, and during the period that was reviewed for participation in the professor competition. She was the supervisor and two successfully defended doctoral students in the department, which is a mandatory condition for participation in the competition.

With the above, we can consider that the educational and pedagogical activity of Yoana Kiselova is almost entirely in the field of the announced competition and has contributed very significantly to the development of the department, which she now leads.

Evaluation of the candidate's scientific and scientific-applied activity

From the data briefly presented above, the scientific and scientific-applied activity of the candidate Associate Professor Yoana Kiselova, especially in the period after taking the position of "associate professor" until now, is also for the most part in the field of the announced competition, something, which will be commented on later when considering the scientific contributions. This can generally be demonstrated with the role it plays in the Ministry of Education and Culture in terms of topics, food, nutrition, quality of life and, in general, nutrigenomics. In the period of 2017 and until now, Prof. Yoana Kiselova is the head of the "Nutrition and Quality of Life" department, as well as the head of the scientific group "Nutrigenomics and personalized nutrition" for this department in the scientific research institute at the MUV, as the role of this institute to concentrate, organize and improve scientific work in the university.

In the competition, the candidate participated with a total of 26 publications, which can be classified as scientific publications and monographs (monographic articles) in publications that are referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus). The listed publications are of varying quality and can generally be evaluated according to the impact factor (IF) of the publication in which they are published. It is important to emphasize that here the publications are not evaluated on their merits, as I have relied on the IF score of the journal used. A separate comment is made when assessing the contributions of these studies to the Ministry of Education, Bulgaria, and world science, which may be different from the publication impact¹.

Most of the presented works (24) can be classified as scientific publications in issues that are referenced and indexed in world-famous databases with scientific information (Web of Science and Scopus). Two of the works refer to the group of published book chapters or collective monographs.

The distribution of scientific works by place of publication is as follows - three of the publications in group B4 are in international editions and three are in Bulgarian. Out of 18 publications from group G7, thirteen are in international editions and five are in Bulgarian. The two monographic publications from the G8 group are in international editions.

The predominant number of publications are from the period 2018-2022. Of these, 23 are experimental studies, one is a methodological article, and two are book chapters. All, without exception, are published in English. The scientific metrics of the publications presented for holding the academic position "professor" as a sum of the various indicators are divided into several groups B4 (scientific publications) - 101 points, G7 (scientific publications) and G8 (review, monographic publications) - 317 points and D11 (citations) - 172 points, with the scoring based mainly on the SCImago system and together with the doctoral dissertation, the total amount of indicators for obtaining the academic position "professor" exceeds the requirements of the Regulations for the Implementation of the Law on the Development of the Academic Staff in Republic of Bulgaria and the Regulations for the development of the academic staff of the Medical University - Varna. The reference presented in the documents was prepared by the MUV library, but my extensive checking on Web of Science and Scopus showed that it is completely true. According to this system, the distribution of the 26 publications presented is as follows: 5 publications are ranked Q1 (19.2%), one is ranked Q2 (3.8%), 9 are ranked Q3 (34.6%) and 9 are ranked Q4 (34.6). The two monographic articles (as required) are scored as Q3 publications.

The scientometric indicators of the candidate in Scopus are as follows: in the most famous database, a total of 37 publications of the candidate are included, which are cited a total of 322 times. Here we can notice two positive trends for the candidate - one is that about 60% of all publications in Scopus are in the period 2020-2022 and that the main citations in the same period are comparable to the rest of the citations in the period 2006-2019, and the citations for 2022 (72) are almost twice as many as for 2021 (38)². A total of 86 citations of the publications presented in the competition are presented, meeting the minimum requirements for occupying the academic position "professor", but as can be seen from the data in Scopus, they are more and the academic reference indicates even more, but they are from publications, out of competition.

¹ For such evaluation, the review used the SJR Journal Evaluation System (a portal that includes the journals and scientific indicators of the country, developed from the information contained in the Scopus (Elsevier) database, accepted for use in the Regulations for the Implementation of the Development Law of the academic staff in the Republic of Bulgaria and the Regulations for the development of the academic staff of the University of Medicine - Varna. SCImago is a free interactive database made with data from Scopus and this represents the links between these two databases. SCImago Journal Rank (SJR) has four ranks (Quartiles) for the journals (Q1, Q2, Q3 and Q4) This unfortunately narrows the range of judgment quite a bit.

² It should be noted that a substantial number of citations (186) are from a single article in *Phytotherapy Research*, 2006.

The analysis of these indicators shows that in this competition there is a candidate for the position of "professor", who is in the exponential phase of her development and will develop at a high rate in the coming years.

The applicant's H-index is 6, which is not impressive for this competition, but since the main part of the publications with which Yoana applied are from the period 2020-2022 (20 works that make up 77% of all 36), and by analysing the h-index curve, it is sure to increase very rapidly in the next 2-3 years.

There are not many publications in which the candidate is the lead author. Most publications have three or more co-authors.

The picture of the candidate's published works is impressive if we analyse them from the perspective of the impact factor of the journals in which they were published, and this actually gives a more realistic picture than the SJR approach used. The total IF of the publications presented in the contest for the period 2019-2022 is 47,532 (according to the candidate's data), which is a remarkable achievement for this short period of publication. The top journals used for publishing are Food Chemistry (9,231), Frontiers in Nutrition (6,590), MDPIs Toxins (5,075) Plants (4,658), and Molecules (4,412), Archives in Physiology and Biochemistry (4,076). Moreover, eight (38%) of the presented 21 publications with IF are Open Access - these are the three editions of MDPI, Turkish Journal of Biochemistry, Frontiers in Nutrition, Folia Medica, Acta Poloniae Pharmaceutica and Veterinarni Medicina, which is in the most modern trends of modern scholarly publishing.

The number of scientific events in which associate Professor Yoana Kiselova participated in the period after taking the position of "associate professor" is also significant - four in Bulgarian and 42 - in international ones. A certain part of them were published in special editions, such as Bulgarian Chemical Communications and Journal of IMAB, and the rest were not analysed in the present review.

4. Scientific, scientific-applied and applied contributions

In this section, a brief analysis of the main scientific, scientific applied, applied, and methodical contributions and characterization of the main achievements of the candidate is made, as well as their significance for science and practice and future prospects for development. Contributions will be divided into several main groups depending on their novelty, comprehensiveness, and originality.

Formulating or substantiating a new theory or hypothesis

Six of Yoana Kiselova-Kaneva's publications reflect the results of research on the fruits of the medicinal elderberry plant (*Sambucus ebulus L.*), with a view to using them as raw materials in the production of food and therapeutic agents. In official and folk medicine, the plant is mainly mentioned as a strong immunomodulator and with its antioxidant content. The fruits of the balm are widely used for the prevention of respiratory infections during the autumn-winter period. In connection with this and with the aim of obtaining scientifically based data on its potential action as an immunomodulatory agent, research was conducted on the chemical composition of the plant, the composition of the established immunomodulators and their effects on various processes in the human body. More than 90 types of compounds have been identified for the first time in *Sambucus ebulus L.*, most of which are reported to have some biological activity and therapeutic potential.

To establish the molecular mechanisms of action of extracts from this plant in the mentioned directions, the expression of indicative genes was used and the change in the behaviour of mouse cells was followed in in vitro models of oxidative stress and inflammatory response in macrophages. Based on the obtained results, a hypothesis was formed about the mechanisms of influencing these processes, which consists in the fact that, applied in vitro in cell cultures, the extracts from the fruits of the sedum have a different effect on the expression of the studied genes, depending on whether they are applied to "un-

stimulated" cells or those exposed to oxidative-proinflammatory provocation - "stimulated cells". In unstimulated cells, administration of the extracts resulted in increased expression of most of the investigated genes of the antioxidant defence and inflammatory response, like the corresponding "stimulatory factors" such as bacterial lipopolysaccharides. The combination of the pre-treatment with *S. ebulus* extracts and a stimulating factor produced the opposite results - a significantly weakened oxidative and pro-inflammatory effect of the corresponding "stimulating factors". The formulation of this hypothesis contributes to the clarification of the immunomodulating potential of this medicinal plant and is in confirmation of the empirical data on its application in folk medicine.

Verification of the hypothesis thus formulated in other similar studies at the cellular and organismal level would contribute to a deeper understanding of the mechanisms by which biologically active components from medicinal plants can influence immune and other processes.

Proving by new means essential new aspects of already existing scientific fields, problems, theories, hypotheses

(A) A number of molecular markers have been investigated in search of new diagnostic and prognostic approaches in various diseases.

- New data were obtained on the significance of matrix Gla-protein (plasma levels and expression in peripheral mononuclear cells) and vitamin D status for the pathology of cardiovascular diseases.

- For the first time, the levels of mRNA for certain genes in saliva of patients with pyelonephritis were investigated in order to study the applicability and as a matrix for diagnostic markers.

- By studying the rate of excretion of sulphated glycosaminoglycans in urine, knowledge about the therapeutic potential of metformin in the treatment of diabetes has been added.

- Conducted in silico modelling and other research related to the development of new, potentially therapeutic molecules and formulations.

(B) Studies related to the influence of mineral waters from the Varna region on the digestive and excretory system.

These contributions are based on the fact that Bulgaria's has a wealth of mineral springs, deposits along the Northern Black Sea coast are about 25% of all hydro-mineral deposits in the country and waters from the Varna basin are available for public use, being believed to have a beneficial effect on the digestive and excretory systems. Against the background of the few studies regarding the composition, in some of the works of the candidate, measurements of basic physicochemical characteristics of these waters were carried out. For the first time, data on the effect of the intake of such waters on some biochemical indicators in healthy volunteers have been obtained. The research contributes to improving the awareness of the population and medical specialists about the composition and the benefits of their use.

Creation of new classifications, methods, constructions, technologies; obtaining corroborating facts.

A new LC-MS analytical method was developed for the quantitative characterization of polyphenols in plant extracts. An advanced method for RNA purification from paraffin sections has been developed.

5. Evaluation of the personal contribution of the candidate/s

Based on the analysis of the presented materials, the knowledge of the scientific unit in which the candidate works; the overall direction of work of this unit and the history of its creation, I can judge that to a very large extent, sufficient for the level of the current competition, the contribution of the candidate in the relevant publications, the formulated contributions and obtained results, are her personal merit.

6. Critical remarks and recommendations

I have no significant critical remarks about the materials submitted for the competition. Where I have some reservations, they are presented in the overall review above.

7. Personal impressions

I have known Yoana Kiselova since she was a student at PU "P. Hilendarski", where I taught her molecular biology and I have excellent impressions of her student work in this direction. I also have excellent impressions of her specialization in the field of genetics and cell biology.

I am also aware of the overall development of Yoana Kiselova after her student years in connection with the development and formation of a special unit at the Ministry of Education, such as the Department of Nutrigenomics, which is an interesting and rarely observed phenomenon in Bulgarian science. Almost from nothing, today an innovative, modern department, composed of young and enthusiastic scientists and teachers, is functioning at the Moscow State University. I am pleased to see that Yoana Kiselova firmly follows the traditions of the department established by Prof. Diana Ivanova and is a worthy deputy, which is a hope that what has been achieved will not be lost, and on the contrary, we will hear more and more about her in the future.

CONCLUSION

The documents and materials presented by Assoc. Prof. Dr. Yoana Kiselova-Kaneva meet all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (The Law), the Regulations for the Implementation of "The Law" and the relevant Regulations of the Ministry of Education and Culture.

The candidate in the competition has submitted enough scientific works published after the materials used in the defence of the PhD and associated professor. In the works of the candidate, there are original scientific and applied contributions that have received international recognition, as a representative part of them has been published in journals and scientific collections published by international academic publishing houses. The theoretical developments have practical applicability, and some of them are directly oriented to the academic work. The scientific and teaching qualifications of Prof. Yoana Kiselova-Kaneva are unquestionable.

The excellent results achieved by Assoc. Prof. Dr. Yoana Kiselova-Kaneva in her academic and research activities fully correspond to the minimum national and additional requirements of the Ministry of Education, Culture, Sports, and Science, adopted in connection with the Regulations of the Ministry of Education and Science for the Application of the "The Law".

After getting acquainted with the materials and scientific works presented in the competition, analysing their significance and the scientific, scientific-applied and applied contributions contained in them, I find it reasonable to give my positive assessment and to recommend to the Scientific Jury to prepare a report-proposal to the faculty Council of the Faculty of Pharmacy for the selection of Associated Professor Dr. Yoana Kiselova-Kaneva to the academic position of "Professor" at the Ministry of Education in the field of higher education: 4. Natural Sciences, Mathematics and Informatics, professional direction: 4.3 Biological Sciences, specialty: Biochemistry.

05/12/2022 Reviewer:

Professor, Ivan N. Minkov, PhD, DSc