

PEER REVIEW

by Professor Diana Georgieva Ivanova, DSc in Biology, Professor in Biochemistry, at the Department of Biochemistry, Molecular Medicine and Nutrigenomics, Faculty of Pharmacy, Medical University 'Prof. Paraskev Stoyanov' of Varna

Re: a competition for acquiring the academic position of 'ASSOCIATE PROFESSOR' in the area of higher education No 7. **Public health and sports**, professional field No 7.4 **Public health**, and in the scientific specialty of **Public Health Management (Medical Biology)** for a competition promulgated in *State gazette* No 83/October 3, 2023 for the needs of the Department of Biology, Faculty of Pharmacy, Medical University 'Prof. Paraskev Stoyanov' of Varna

1. Brief information about the competition

On the grounds of a Decision of the Faculty Council of the Faculty of Pharmacy (Protocol No 63/November 10, 2023) and Order R-109-517/November 30, 2023 of the Rector of the Medical University 'Prof. Paraskev Stoyanov' of Varna I have been elected member of the Scientific jury and with Protocol No 1/December 14, 2023, I am assigned to prepare a peer review in relation to the procedure for a tenure of the academic position of 'ASSOCIATE PROFESSOR' for the needs of the Department of Biology, Faculty of Pharmacy, Medical University 'Prof. Paraskev Stoyanov' of Varna in the area of higher education No 7. **Public health and sports**, professional field No 7.4 **Public health**, and in the scientific specialty of **Public Health Management (Medical Biology)**.

Biologist Tsonka Slavova Dimitrova, PhD, assistant-in-chief at the same department, is the only candidate in the competition. The inspection of the documents submitted shows that they are pedantically prepared and completely meet the requirements of the Law for development of the academic staff in the Republic of Bulgaria and the Regulations for its implementation.

2. Career profile of the applicant

Tsonka Slavova Dimitrova acquired the educational qualification degree of 'Master' in the specialty of 'Biology' at the Faculty of Biology of the University 'Paisii Hilendarski' of Plovdiv in 2000. In June 2001, she was appointed biologist at the Immunohistochemical Laboratory in the Clinic for General and Clinical Pathology at St. Marina University Hospital of Varna, a sole joint-stock company where she worked until 2010. Her lecturer's service began on March 4, 2010, as assistant of biology at the Department of Biology of the Faculty of Pharmacy, Medical University 'Prof. Paraskev Stoyanov' of Varna. In 2019, she entered the full-time Ph.D. programme of Medical biology in the same department. After a successful defence of dissertation work on the theme of 'Investigations and screening methods for early diagnosis of patients with gastrointestinal disorders because of mushroom consumption' on October 8, 2021, Tsonka Slavova Dimitrova acquired the scientific and educational degree of 'Doctor of Philosophy' in the scientific specialty of Medical biology. This work represents a profound, topical, and significant investigation with a non-standard approach to the toxicology of wild mushrooms. Since June 2022, she has occupied the academic position of 'assistant-in-chief' in the same department. Tsonka Dimitrova performed classes in 'Medical biology' during the period between 2012 and 2016 and on June 1, 2016, she acquired this specialty.

3. Teaching activity

The annual teaching loading of assistant-in-chief Tsonka Slavova Dimitrova, PhD, during the last five academic years (between 2018 and 2023) is considerable. It varies between a total of 476 hours and a total of 608 hours of auditory occupation at a norm of 360 teaching hours yearly. The lectures represent a total of 10 to 48 hours and the practical exercises - between 460 hours and 592 hours in the obligatory educational discipline of 'Biology' of the students of the specialties of Master in Pharmacy and Assistant pharmacist and the discipline of 'Human Biology' of the students of the specialties of 'Medicine' and 'Dental Medicine'.

4. Scientometric data about the scientific production presented

Assistant-in-chief Tsonka Slavova Dimitrova, PhD, participates in the present competition with the following scientific works:

- **one** dissertation thesis for the acquisition of the scientific and educational degree of "Philosophy Doctor" (indicator A1 with **50** scores);
- **ten articles** which are abstracted and indexed in world-famous databases with scientific information and are publications equivalent to a monograph/a research work qualifying for an academic degree (indicator V4 with a total of **187,3** scores);
- **two articles** that are abstracted and indexed in world-famous databases with scientific information (indicator G7 with a total of **120** scores), and
- **ten** articles that are published in non-referenced journals with scientific peer reviewing or in edited collective volumes (indicator G8 with a total of **108,9** scores).

Assistant-in-chief Tsonka Slavova Dimitrova, PhD, is the only author of five papers, the first author of two papers, the second author of ten papers, the third author of one paper, the fourth author of three papers, and the ninth author of one paper as a participant in an international authors' collective published in a foreign journal. These articles are published after the acquisition of the scientific and educational degree of "Philosophy Doctor" in eight Bulgarian and two foreign journals.

The total number of citations is **four** (one article in four articles by foreign authors in four journals). They bring **60** scores against the 50 scores required for the coverage of the minimal requirements for the academic position of 'ASSOCIATE PROFESSOR' in the professional trends of the competition.

Assistant-in-chief Tsonka Slavova Dimitrova, PhD, has active scientific profiles in:

Google Scholar: <https://scholar.google.com/citations?user=53yyqNEAAAAJ>

ORCID: 0000-0002-8796-7155

SCOPUS Author ID: 57954623200.

5. Evaluation of the research activity and scientific contributions

The scientific investigations of Tsonka Dimitrova are characterized by clinical orientation and interdisciplinarity.

I would differentiate in a thematic aspect the results from her research work in the following main trends:

1. Dermatoglyphics and immunohistochemistry of breast cancer and patients' quality of life
2. Characteristics of the knowledge of wild mushrooms and of their usage.
3. Others

1. Dermatoglyphics and immunohistochemistry of breast cancer and patients' quality of life: V4-No 4; V4-No 5; V4-No 6; V4-No 9; V4-No 10; G7-No 2; G8-No 5; G8-No 6, and G8-No 8.

In the analysis of the quantitative characteristics of the palmar ridge count in females with breast cancer and healthy females, certain statistically significant differences in terms of the dermatoglyphic palmoscopic characteristics between the female patients and the controls are found. They demonstrate the predisposition to the development of this disease of great medico-social significance and could help the accomplishment of its rapid, cheap, and reliable early screening (V4-No 10).

Some statistically significant differences in terms of some quantitative dermatoglyphic characteristics of the finger and palmar papillary traits between the women with breast cancer and the healthy volunteers are identified, too. The relationship between the dermatoglyphic images in women and their predisposition to the development of the disease is proven and the peculiarities of the dermatoglyphic status are considered as a prognostic biomarker (V4-No 4).

The role of dermatoglyphics for the prevention and prognostication of breast cancer is the objective of a concise survey. The existing differences between the women with this disease and the healthy controls in terms of the qualitative and quantitative dactiloscopic and palmoscopic characteristics and the findings of the fluctuation asymmetry can be used as a cost-effective and reliable analytical tool for successful early prevention and improvement of the prognosis of the disease (G7-No 2).

In the quantitative analysis of the dermatoglyphic dactiloscopic characteristics, a series of statistically significant differences between the female breast cancer patients and the healthy women in terms of the finger ridge count of the first and second finger of the right hand and of the second and third finger of the left hand are found out. These results can help the performance of rapid, cheap, and reliable early screening of this socially significant disease (G8-No 8).

The diagnostic value of the conventional immunohistochemical examinations in 128 female breast cancer patients in the city of Varna during the period 2017-2020 is analysed. The specificities of certain histological and molecular subtypes of the disease concerning the presence of a positive or a negative expression of four biomarkers such as estrogenic receptors and receptors for progesterone, human epidermal growth factor receptor-2, and proliferation index Ki-67 and their combinations, as well as their prognostic value in patients, are analysed. The role of the expression of single receptors for suitable and timely decision-making concerning the necessity and benefit of additional chemotherapy in selected surgically treated patients is proved. The new combinations of biomarkers that represent the basis for the diagnostic algorithms with increasing complexity are an undoubted contribution to this field (V4-No 5).

Quadruple-negative breast cancer is characterized by a negative expression of the estrogenic, progesterone, and androgenic receptors and of the human epidermal growth factor receptor-2, and it has the poorest prognosis. The presently known prognostic biomarkers are much less in it than in triple-negative breast cancer. The identification of the circulating microRNAs specific to this malignant tumour can help its early diagnosis and its prognosis (G8-No 6).

The analysis of the contemporary literature demonstrates that quadruple-negative breast cancer is highly proliferative and immunogenic. Because of this, it is considered an ideal candidate for cytotoxic chemotherapy and immunotherapy. The results from the application of some new therapeutic agents in female patients with triple and quadruple negative breast cancer are systematized (G8-No 5).

It should be noted that, for the first time in our country, the unfavourable influence of breast cancer on the individual quality of life is investigated using a specialized questionnaire for

patients with upper extremity lymph oedema. The questionnaire contained 27 items and was filled out by 57 female patients following successful operative treatment of the disease (V4-No 9).

The structure and dynamics of science institutionalization on the problems of breast cancer immunohistochemistry are studied within a problem-oriented scientometric investigation. The results obtained could help the further incorporation of the Bulgarian scientific community to world standards through effective collaboration with leading scientists from abroad (V4-No 6).

2. Characteristics of the knowledge of wild mushrooms and of their usage: A1, V4-No 1; V4-No 3; V4-No 8; G7-No 1; G8-No 1; G8-No 3, and G8-No 4

Within the retrospective 18-year clinical-epidemiological study of a total of 672 patients in the region of Varna, hospitalized on the occasion of acute intoxications with wild mushrooms in the Naval Hospital of Varna at Military Medical Academy, considerable differences in terms of gender and age characteristics are established. A considerable diminution of the number of intoxicated males, females, and all the patients as a whole during the second nine-year period is observed (G8-No 1).

The results from the first in our country inquiry investigation on the extent of awareness of a total of 200 adult individuals in the region of Varna about wild mushrooms and the ways of their usage are systematized in the dissertation for the acquisition of the scientific and educational degree of 'Philosophy doctor' (A1). The various usage of the edible wild mushrooms by the population and the necessity of an effective prevention of the poisonings with toxic wild mushrooms are confirmed. The intoxications with the wild mushroom *Amanita phalloides* in 147 patients hospitalized in the Clinic of Intensive Treatment of Acute Intoxications and Toxiocoallergies of Naval Hospital of Varna at Military Medical Academy are retrospectively analysed. For the first time in Bulgaria, Meixner's test for the detection of amatoxins in stomach contents and in mushroom samples and ELISA examination for the detection of amatoxins in urine are approved.

Some results from newly published investigations by Bulgarian and foreign authors of the identification and current distribution of a series of species of wild edible, toxic, and medicinal mushrooms in Bulgaria and some European countries are presented. Several newly recognized mushrooms are described. The role of the investigations of the safety of wild mushrooms under the conditions of environmental pollution is outlined (G7-No 1).

An undoubted contribution to the scientific trend of ethnomycology and ethnobotany are the results related to the attitudes and knowledge of the population in the Region of Varna concerning the usage of the edible wild mushrooms as well as concerning the recognition of the toxic counterparts of some of them by the respondents with different demographic and educational peculiarities. The findings from some newly published investigations by Bulgarian and foreign authors devoted to the knowledge of popular wild mushrooms and medicinal plants and their usage are systematized. The necessity of intensification of the joint ethnomycological and ethnobotanical activity in Europe is emphasized (V4-No 8).

The anonymous inquiry investigation demonstrates some interesting characteristics of the attitude towards the edible wild mushrooms among 200 participants in the region of Varna. The study reveals some specifics of the attitudes towards the edible wild mushrooms among the urban and rural population in the Region of Varna and the size of the usage of commonly occurring mushrooms in dependence on respondents' main residence. The majority of the respondents in the region of Varna behave negatively towards the edible wild mushrooms (V4-No 1).

The results from an anonymous inquiry investigation demonstrate some interesting characteristics of the attitude towards the edible wild mushrooms among 200 adult inhabitants of

the region of Varna with secondary, elementary, and higher education and the extent of the use of the common mushrooms in relation to their educational level (G8-No 3).

Some differences in the attitude towards the edible wild mushrooms and the size of the usage of common mushrooms in dependence on respondents' educational level are rendered an account. In the course of an anonymous inquiry investigation, a satisfactory awareness of 200 adult individuals with elementary, secondary, and higher education in terms of the edible wild mushrooms in the Region of Varna is found. The respondents with secondary education are best informed about these mushrooms (G8-No 4).

3. *Other*: V4-No 2 and V4-No 7

New documents and data about several classified plant species in South-Eastern Europe and adjacent regions are presented. A communication related to descriptive data concerning *Cephalanthera damasonium*, which is not a new species for the floristic region of North-Eastern Bulgaria, and however, is described for the first time in the protected natural reserves along the valley of Batova river and Dry river are presented (V4-No 3).

The review article about the features of ozone under the conditions of COVID-19 pandemic as disinfection and therapeutic means because of its outlined antiviral activity represents undoubted interest. The modern means and methods for hospital disinfection play an essential role in this pandemic. Ozone inhibits virus replication and directly inactivates the viruses through interaction with the replication phased of the virus and attacking the capsular proteins. The ozone therapy is very cheap and can be safely exploited in COVID-19 (V4-No 2).

It is established that the routine application of the cryopreservation of embryos has numerous advantages in the programmes for in vitro fertilization. In the comparison of the behaviour of 31 early and 83 expanded blastocysts after vitrification it has been proved that the mechanical collapse of the blastocyst cavity by means of micropipette puncture positively influences upon embryos' survival (V4-No 7).

I could make the following generalization of the scientific contributions of the works of assistant-in-chief Tsonka Slavova Dimitrova, PhD:

Her elaborations are characterized by a complex approach, critical, clinically oriented thinking and striving for effective collaboration within interdisciplinary teams of biologists, botanists, gynaecologists, and anatomists. Assistant-in-chief Tsonka Slavova Dimitrova, PhD, presents herself in the present competition with a high-quality scientific production and publications. Her scientific contributions in the field of the medical biology and public health are of original theoretical and practical nature.

6. Conclusion

I am convinced that the research and also the teaching activity of assistant-in-chief Tsonka Slavova Dimitrova, PhD, correspond to the scientometric indicators required according to the Law for development of the academic staff in the Republic of Bulgaria, the Regulations for its application, and of the Regulations for development of the academic staff in the Medical University of Varna for tenure of the academic position of 'Associate Professor'.

I give my positive evaluation and propose to the honoured members of the Scientific jury to vote for this, assistant-in-chief Tsonka Slavova Dimitrova, PhD, to be awarded the academic position of 'Associate Professor' in the scientific speciality of *Public Health Management (Medical Biology)*, area of higher education No 7. *Public health and sports*, professional field No

7.4 *Public health* for the needs of the Department of Biology, Faculty of Pharmacy, Medical University 'Prof. Paraskev Stoyanov' of Varna.

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