

SCIENTIFIC REVIEW
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MEMBER OF THE SCIENTIFIC JURY FOR THE ADMINISTRATIVE POSITION "ASSOCIATE PROFESSOR"
(PUBLISHED IN THE STATE GAZETTE NO 41/03.06.2022),
PURSUANT TO ORDER R-109-319/29.07.2022 Г. OF THE RECTOR OF THE MU-VARNA,
SCIENTIFIC SPECIALTY "PUBLIC HEALTH MANAGEMENT (ANALYSIS OF MEDICINAL PRODUCTS)" IN THE
FIELD OF HIGHER EDUCATION 7. HEALTHCARE AND SPORTS, PROFESSIONAL DIRECTION 7.4. PUBLIC
HEALTH, FOR THE NEEDS OF EDUCATION SECTOR "ASSISTANT PHARMACIST", MEDICAL COLLEGE -
VARNA

One candidate took part in the competition - Chief assistant professor Silvia Mihailova, Ph.D.

1. Analysis of the candidate's career profile.

Silvia Mihailova obtained the educational qualification "Master of Pharmacy" in 2003 at the Faculty of Pharmacy, Medical University-Sofia. In 2019, she defended her doctoral degree in the specialty "Bioorganic chemistry, chemistry of natural and physiologically active substances", and in 2021 she acquired the specialty "Analysis of medicinal products". From 2006 to 2013 Chief assistant professor Silvia Mihailova, Ph.D. is a manager of pharmacies, which gives her the opportunity to gain practical experience in the management of pharmacy activities. In 2013, she was appointed as an assistant professor at the Medical College-Varna, and in 2020 - as a chief assistant professor. Since June 2020, he is the head of the Academic Sector "Assistant Pharmacist". She speaks English and Russian.

2. Evaluation of the scientific works of the candidate for the overall academic development.

Those presented by Chief assistant professor Silvia Mihailova, Ph.D. scientific works have a scientific-theoretical, scientific-applied and scientific-confirmatory character and explore various areas of public health. The candidate participated in the competition with a total of 24 scientific papers, as follows:

- Dissertation work with an abstract - "Synthesis and biological evaluation of SMAC-NT peptide conjugates with combined antineoplastic and analgesic action." ;
- 5 publications indexed in world-famous databases with scientific information (Scopus and WebScience);
- Monograph, which is presented as the main habilitation thesis - "Peptides as medicine", 2022, Medical University - Varna;
- 16 publications in non-refereed peer-reviewed journals or published in edited collective volumes;
- 1 full-text publication in scientific journals and anthologies, beyond the minimum scientometric requirements for holding the administrative position of "Associate Professor".

All the publications with which the candidate participates in the competition are printed and are in various magazines and anthologies. 2 of the publications presented for the purposes of the competition are with IF. The scientific journals and anthologies in which the works are published are diverse and correspond to the developed themes, which are united around public health.

In 3 of the presented scientific publications, the candidate is the first author, in eight publications she is the second author.

In her self-evaluation, the candidate divided the points awarded for each presented scientific work in proportion to the number of co-authors, and the candidate's points by groups of indicators, which I recognize, are as follows: indicator A - 50 points, indicator B3 - 100 points, indicator Γ - 230.5 points, indicator D - 105 points. A list of citations, outside the minimum requirements for occupying the academic position of "associate professor", is also presented.

The candidate's participation in scientific forums is as follows:

- Participation in scientific conferences with reports that are published in full text (2015-2022) – 12;
- Participation in international scientific conferences with published abstracts – 5;
- Participation in scientific forums abroad - 5;
- Participation in international scientific forums held on the territory of Bulgaria - 7 participations with a poster;
- Participation in scientific forums in Bulgaria – 7 (with two reports and five posters).

The areas of scientific research interest of chief assistant professor Silvia Mihailova, Ph.D. and, accordingly, the contributions on them can be summarized in the following main directions:

- Food and nutrition;
- Oncology and rare diseases;
- Prevention, management of diseases and health systems;
- Peptide chemistry.

The research work of chief assistant professor Silvia Mihailova, Ph.D. clearly demonstrates relevance and effectiveness. Her scientific contributions show a systematic, consistent development in the field and its practical applications to solve specific problems in public health.

The candidate participated in five scientific projects financed by the "Science" Fund, MU-Varna and the "Scientific Research" Fund, Ministry of Education and Science, as follows:

- "Pharmacobiochemical studies of model cationic peptides with potential antimicrobial action"; source of funding – MU-Varna, period: 2015-2016;
- "Molecular approach to study the biological effects of new AVPI/RGD peptide analogs"; (M 01/6 from 04.09.16); source of funding - "Scientific Research" Fund - MES, period: 2016-2018.
- "Holistic approach in targeted cancer therapy" (DH19/17); source of funding - "Scientific Research" Fund - MES, period: 2017-2020

- "New RGD/polyamines - synthesis and study of antitumor activity"; Project No. 17010; source of funding - "Science" Fund, MU-Varna, period: 2017 - 2020
- "Combination of essential oils from representatives of the Lamiaceae family and antibiotics, reducing the microbial resistance of significant clinical isolates" Project No. 21012, source of funding - "Science" fund, MU-Varna, period: 2021-2024.

3. Evaluation of the main scientific contributions of the candidate.

The main scientific contributions are in the 4 areas of scientific interest of the candidate, indicated in item 2 of this review, as follows:

- **Contributions in the scientific field "Food and Nutrition":**

In this field, the candidate's scientific contributions are related to terminological introduction, research and presentation of the concept of "functional food".

Based on a thorough study, the role of food in the prevention, treatment and rehabilitation of various diseases is shown, with an emphasis on those with a high disease burden on society.

Basic chemical characteristics of various medicinal plants that are successfully used in pharmacy and medicine are derived. Several groups of medicinal plants have been analyzed in the context of complementary and alternative medicine (CAM) methods.

The indications for their use in severe socially significant diseases are reviewed and the additional benefits for the patient of their inclusion in conventional therapy are shown.

Epidemiological and social aspects of food and nutrition are reviewed. The role of functional foods in the prevention and treatment of liver diseases, socially significant oncological and infectious diseases is shown.

The scientific works in this field, according to the reference attached to the documents for the competition, are: Г.8.5; Г.8.8; Г.8.10; Г.8.11.

- **Contributions in the scientific field of "Oncology and rare diseases":**

The molecular characteristics and potential of short peptides and peptide mimetics as new therapeutic options for cancer treatment and cancer pain control are reviewed.

A preliminary screening for cytotoxic activity of native NT (8-13) was performed by means of in vitro tests on two cell lines - MCF-7 (breast cancer cells) and 3T3 (non-cancer cells).

In the presented research, the pharmacokinetic behavior and possible drug interactions where RGD and NT(8-13) may be involved have been investigated.

The influence of these sequences on the activity of the most common cytochrome P450 enzyme CYP3A4, which is responsible for most drug interactions, was investigated.

The analgesic activity of newly synthesized neurotensin analogs was investigated and a central mechanism for realizing an analgesic effect independent of opioid pathways was proven.

The place of mycotherapy and fungitherapy in patients with oncological diseases is discussed. The advantages of beta-glucans (a heterogeneous group of polysaccharides) on the immune system and their synergistic action when combined with chemotherapy and/or radiation therapy are indicated.

The scientific works in this field, according to the reference attached to the competition documents, are: Г.7.3; Г.7.4; Г.8.8; Г.8.9 and Г.8.11.

- **Contributions in the scientific field "Prevention, management of diseases and health systems":**

All publications of chief assistant professor Silvia Mihailova, Ph.D. are guided by the research conviction that focusing more resources on strategies for health promotion and disease prevention is most important for reducing the impact of risk factors.

Current problems of modern health care are brought out, namely how the health care system is affected by new health technologies, and measures are defined to ensure patients' access to them by building appropriate mechanisms. The economic, social and medical impact of new technologies after their introduction is examined.

The possibilities of new technologies to change the course of the disease in patients with chronic diseases are examined. The advantages of peptide drugs over small molecule drugs and biotechnological proteins are shown, as well as various methods of peptide modifications to increase the metabolic stability, bioavailability and pharmacokinetic properties of peptides. In this regard, a number of new therapies have been systematized in the treatment of socially significant diseases.

The effect of pharmacotherapeutic changes on additional cardiovascular and renal benefits following the introduction of new therapies in the treatment of type 2 diabetes mellitus was monitored.

The concept of the International Pharmaceutical Organization (FIP) "Pharmaceutical care" has been confirmed as increasingly necessary for the better treatment of the Bulgarian patient, which, in addition to improving the quality and length of life, also has a beneficial effect on the health budget by reducing direct and indirect costs and saves considerable money.

In some of the presented publications, it has been proven that pharmaceutical care can reduce both the number of errors and the costs caused by them.

The key role of pharmacists as healthcare professionals in recognizing and assessing the severity of allergic rhinitis, dispensing over-the-counter medications, counseling patients and, in severe cases, referring them to healthcare professionals for further treatment has been proven.

Studies have been carried out in the field of diabetes and breast cancer in the municipality of Varna, and the results of the frequency of morbidity, the medicinal products used and the funds paid by the Varna Regional Health Insurance Fund have been presented.

The effect of introducing effective screening programs and consultations for preventive medical care regarding the early detection, diagnosis and therapy of these diseases, as well as on the duration and quality of life, is shown.

The scientific works in this area, according to the reference attached to the competition documents, are: Г.7.1; Г.7.2; Г.7.5; Г.8.1; Г.8.3; Г.8.4; Г.8.6; Г.8.7; Г.8.10; Г.8.12; Г.8.13; Г.8.14; Г.8.15; Г.8.16.

- **Contributions in the scientific field "Peptide Chemistry":**

The main contribution of the candidate in this field consists in expanding the knowledge about the therapeutic effects that can be achieved through various synthetic processes and are related to certain modifications in the structure of peptides. The situational analysis made shapes the strategic vision for the key role of peptides as an economically effective and safe alternative to modern small molecule drugs.

The achievements of peptide chemistry for the synthesis and improvement of the physicochemical properties leading to an increase in the biopharmaceutical and pharmacokinetic parameters of peptide molecules are presented. Part of the research is related to the design, synthesis and characterization of new peptides, which expands the scope of knowledge in the field of peptide chemistry. By the method of solid-phase peptide synthesis, 9 new peptide analogues of SMAC and neurotensin and 3 peptide conjugates with combined antineoplastic and analgesic effects were obtained.

Through experiments in the field of fundamental chemical science, those changes and substitutions in peptide molecules have been discovered that increase their stability and improve their pharmacological effect.

Newly synthesized peptides were investigated for analgesic and cytotoxic activity with the aim of their potential application in the therapy of neoplastic diseases. The obtained results and experience will potentiate subsequent, building upon fundamental studies in the field of AVPI-mimetics and NT-mimetics, in the development of a new class of more active and specific medicinal products.

Methods for improving the metabolic stability of peptide drugs are discussed in detail.

The various classes of antimicrobial peptides (AMPs) that occur in nature and represent an important part of the innate immune defense of plants, insects, and mammals (including humans) are systematically presented. Their potential therapeutic advantages in the fight against antimicrobial drug resistance are highlighted.

The scientific works in this area, according to the reference attached to the competition documents, are: Г.7.1; Г.7.3; Г.7.4; Г.8.2; Г.8.9; Г.8.10.

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

The candidate began her teaching activity as an assistant professor at Medical College-Varna in 2013, and she has been in her current academic position since 2020. Since June 2020, the candidate has been the head of the Education Sector "Pharmacist's Assistant". He has a total teaching experience of 8 years, 7 months and 15 days.

It is clear from the provided study workload report that the candidate has a workload that is significantly above the minimum, and that in various aspects of the teaching activity such as lectures, exercises, training practice and pre-diploma internship.

The relationship between the candidate's scientific and teaching activities is impressive. The scientific developments of chief assistant professor Silvia Mihailova, Ph.D. are used in the training of students from the "Assistant Pharmacist" specialty in the compulsory study subjects "Pharmaceutical Chemistry" and "Social Pharmacy and Pharmaceutical Legislation", as well as in the training of the freely optional subject "Homeopathy". They also find practical application in the direct work of the graduated health professionals - assistant pharmacists, related to their job description.

5. Conclusion

The submitted materials for the competition show that chief assistant professor Silvia Mihailova, Ph.D., **fully meets the requirements** for holding the academic position "Associate Professor", according to the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Regulations for its Application and the Regulations of the Medical University "Prof. Dr. P.Stoyanov"-Varna.

The presented scientific works and evidence of teaching activity meet the quantitative and qualitative criteria and have a high contribution character. They testify to a long-

standing commitment to science and the problems of the areas in which the candidate has publication activity.

Documents have been submitted that certify that the candidate has the necessary experience as a university teacher and has a guaranteed study load, according to the legal requirements. Based on my personal impressions, I can confidently state that chief assistant professor Silvia Mihailova, Ph.D. has the necessary pedagogical and methodical competence.

Given the above, I confidently give my positive assessment of chief assistant professor Silvia Mihailova, Ph.D. in the competition and I strongly suggest to the respected Members of the Scientific Jury to award her the academic position of "Associate Professor" in the field of higher education 7. Healthcare and sports, by professional direction 7.4 Public health and scientific specialty "Public health management - Analysis of medicinal products" for the needs of the Education Sector "Pharmacist Assistant", Medical College - Varna.

Sofia,
11.10.2022

Signature: 
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