МЕДИЦИНСКИ УНИВЕРСИТЕТ - ВАРНА
„Проф. д-р Параскев Стоянов"
Ул."Марин Дринов" 55, Варна 9002, България
Тел. : 052/ 65 00 57, Факс: 052/ 65 00 19
e-mail: uni@mu-varna.bg, www.mu-varna.bg

MEDICAL UNIVERSITY - VARNA
"Prof. Dr. Paraskev Stoyanov"
55, Marin Drinov Str., 9002 Varna, Bulgaria
Tel.: +359 52/ 65 00 57, Fax: + 359 52/ 65 00 19
e-mail: uni@mu-varna.bg, www.mu-varna.bg

REVIEW

From: Associate Professor Iliya Zhelev Slavov, Ph.D.

Department of Biology, Faculty of Pharmacy,

Medical University – Varna 'Prof. Dr. Paraskew Stoyanov'

Regarding: submitted documents for the competition for the academic position of Associate Professor at the Faculty of Pharmacy, Medical University of Varna in the field of higher education 7. Healthcare and Sport, professional direction 7.3. Pharmacy, scientific specialty: Pharmaceutical chemistry announced in State Gazette, issue 7/ 23.01.2024

Competition for the occupation of the academic position "Associate professor", announced in State Gazette, issue 7/ 01.23.2024 for the needs of the Department of Pharmaceutical Chemistry, Faculty of Pharmacy at Medical University "Prof. Dr. P. Stoyanov" - Varna, field of higher education 7. Healthcare and sport, professional direction 7.3. Pharmacy, specialty "Pharmaceutical Chemistry" on a full-time basis - one. At the competition for "Associate Professor" in Medical University "Prof. Dr. P. Stoyanov' - Varna, only one candidate appeared - Chief Assist. Prof. Silvia Yordanova Atanasova-Stamova, MScPharm, PhD.
The set of documents were prepared in accordance with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), as well as the Regulations for the Implementation of the LDASRB (RILDASRB) and the Regulations for the terms and conditions of acquisition of academic positions at the Medical University "Prof. Dr. P. Stoyanov" — Varna.

Biographical data and career development

Ch. Assist. Prof. Silvia Yordanova Atanasova-Stamova, Ph.D., graduated in 2004 from Medical College-Varna with a specialization in assistant pharmacy. In 2016, she graduated as a Master Pharmacist from Medical University-Varna, achieving excellent results. In 2017, she started working as an Assistant Professor at the Department of Pharmaceutical Chemistry, Faculty of Pharmacy, MU-Varna, following a competitive examination. She has since held the positions

of Assist. Prof.(2017-2021) and Ch. Assist. Prof. (2021-present) in the Department of Pharmaceutical Chemistry at the Pharmacy Faculty of MU-Varna. In 2018, she enrolled as a full-time Ph.D. student in Pharmaceutical Chemistry within the same department. Subsequently, she successfully defended her dissertation titled "Synthesis and Characterization of Substituted Imidazole Derivatives with Potential Biological Effects" in 2021. Additionally, she acquired a specialty in "Analysis of Medicinal Products" in 2021.After defending her Ph.D. in 2021, Silvia Yordanova Atanasova-Stamova assumed the position of "Chief Assistant Professor" (requiring at least 2 years of experience as per the Regulations of MU-Varna).

Evaluation of quantitative and qualitative indicators

From the provided academic reference, it is clear that the candidate meets the minimum national requirements laid down in the Law on the Development of the Academic Staff in the Republic of Bulgaria for obtaining the academic position of "associate professor" and the requirements of MU-Varna (Table 1). With a required sum of 400 points, chief asst. prof. Atanasova-Stamova has presented evidence for 445.14 points

Table 1. Reference to compliance with the requirements of the position..

A group of metrics		Minimum National Requirements (MNR) - sum of points	Minimum requirements MU-Varna-total points	General Assistant Silvia Yordanova Atanasova-Stamova, Ph.D.
A	Indicator 1	50	50	50 points
B	Indicator 2	-	-	-
C	Indicators 3 or 4	100	100	100 points
D	Amount of indicators 5 to 9	200	200 (≥80 points for non-clinical specialties from indicator 7)	230.14 points (136.14 of indicator 7
E	Amount of indicators 10 to 12	65	65	65
F	Amount of indicators from 13 to the end	-	-	-

Total points		400	400 items (≥80 items from indicators 7)	445.14 t. (136.14 items from indicators 7)

Silvia Atanasova-Stamova participates in the procedure with 24 scientific works totally, 1 dissertation for a PhD degree, 1 monograph, 11 publications, published in peer-reviewed scientific journals, referenced and indexed in Scopus/Web of Science, 12 publications in non-indexed peer-reviewed journals. Three of the publications are in journals with an impact factor. Silvia Atanasova-Stamova is the first author in 61% (11 publications), second author in 13% (3 publications) of the real developments presented for the competition. Ch. Assist. Prof. Silvia Atanasova-Stamova also provides 6 publications, beyond the minimum scientometric requirements.

Ch. Assist. Prof. Silvia Atanasova-Stamova also presents a list of 33 participations in national and international scientific forums in the country and 19 abroad.

The present monograph examines a contemporary and very serious problem, namely the directions in the fight against antimicrobial resistance in humans. In this regard, the topic of the monographic work is undoubtedly current and multidisciplinary, aiding a wide range of medical specialists. Special emphasis is placed on exploring possible alternatives for dealing with AMR through the application of various natural products. The question of the application of the IR spectroscopic method in the analysis of essential oils is also discussed. The scientific work contains a very rich personal experimental section. It is extremely valuable and undoubtedly proves the high efficiency of oregano, thyme, and lavender oils, while also providing directions for innovative approaches to search for synergistic action between the oils themselves and their combinations with other natural components. The results of the research analyses and conclusions are presented, providing working strategies to address the inherent problem of labor. For this reason, the presented monographic work is a significant, up-to-date, and timely publication, dedicated to exploring the possibilities of applying essential oils with an emphasis on representatives of the *Lamiaceae* family. These findings can be applied in practical work and serve as a new source of knowledge for students, specialists, doctoral students, and scientists interested in learning about the antimicrobial properties of natural products. The presented monographic work fully meets the requirements laid down in the law.

Evaluation of the candidate's research activity and contributions

The scientific research activities of Ch. Assist. Prof. Silvia Atanasova-Stamova encompass pharmaceutical chemistry and investigations into the potential of newly synthesized compounds with enhanced biological effects compared to controls. Additionally, her research involves assessing the antimicrobial potential of natural substances and exploring synergistic interactions between these substances and various drugs. The topic of scientific papers is in the field of competition. I accept the author's reference prepared by the candidate for the contributions, which can be formulated in 3 main directions:

1. Synthesis, characterization, and biological evaluation of newly synthesized molecules (9 publications).

2. Microbiological evaluation of various natural substances and natural products (6 publications).

3. Prevention and treatment of diseases of different etiology (8 publications).

In the areas presented, I would highlight the following more important scientific-theoretical and scientific-applied contributions:

- The development of a two-step synthetic method for obtaining metronidazole amide derivatives and the synthesis of two new derivatives - MT2 and MT3 - represents a contribution to the field of pharmaceutical chemistry. The synthesis and analysis of new amide derivatives of metronidazole expand the possibilities to study the structural and functional properties of these compounds, including the investigation of potential new pharmacological effects and applications. A contribution to clarifying the structural features and identity of newly synthesized amide compounds and derivatives of metronidazole was achieved using analytical techniques such as FT-IR, 1H and 13C NMR.
- The antimicrobial susceptibility of the new amide derivatives (MT2 and MT3) was evaluated against clinical isolates and a reference anaerobic strain using in vitro microbiological methods. It was established that the introduction of an amide group into the structure of metronidazole derivatives leads to the appearance of stronger antimicrobial activity against the clinical isolates studied and reference strains compared to metronidazole.
- With the help of theoretical approaches (applied in silico model), the possibilities for metabolic liver and skin activation of metronidazole and its metabolites, as well as partners in the synthesis of new amide derivatives of metronidazole, benzocaine, and butezine, have been successfully identified. The theoritical and scientifically based

prediction of possible reactions and mechanisms of metabolism and activation contributes significantly to the design of new drugs, elucidation of their mechanism of action, search for a stronger effect, and lower toxicity.

- New hydrazone derivatives of bexarotene have been synthesized. An HPLC method was developed and validated with the help of which the new hydrazone derivatives of bexarotene were successfully characterized.
- A contribution to the qualitative analysis of hydrazone analogues of bexarotene is the characterization of a new hydarzone derivative of bexarotene using FT-IR spectroscopic analysis.
- A contribution to the elucidation of the metabolic dermal activation of new hydrazone derivatives of bexarotene has been achieved using an in silico model.
- The antifungal potential of essential oils of thyme and oregano, as well as their synergistic interactions with commonly used antifungal drugs such as nystatin and fluconazole, was evaluated using the checkerboard method. A synergistic effect of fluconazole with Thymus vulgaris essential oil has been proven; nystatin and Thymus vulgaris essential oil; nystatin and Origanum vulgare essential oil. The high antimicrobial activity of essential oils from Thymus vulgaris thyme was found using the Kirby-Bauer disk diffusion susceptibility test. A potent inhibitory effect of oregano essential oils was found in the control of reference strains of Gram (+) and Gram (–) pathogens.
- Modern approaches to the treatment of *Helicobacter pylori* infection are presented, based on eradication protocols as a supplement to already established therapeutic regimens with a contribution to improving health care. *H. pylori* infection is associated with a variety of digestive and gastrointestinal problems, including gastritis, peptic ulcers, and even the risk of developing stomach cancer. Regardless of established therapeutic schemes, modern approaches proposed complement these schemes and emphasize important aspects such as an individualized approach, personalized treatment, reducing the risk of relapses, and increasing the effectiveness of treatment.
- The advantages and effectiveness of the topical treatment of Acne rosacea with metronidazole compared to systemically administered drugs are presented. Its local application on the affected skin acts directly on the inflammatory processes. This reduces the risk of unwanted side effects or possible drug interactions, helping patients adhere to their treatment and achieve better outcomes and disease control.
- An important practical contribution to modern medical science and practice is the analysis of the efficacy of antifungal treatment of candidiasis and the emphasis on the role of azoles in the prevention and control of this pathogen. One of the most important

aspects of azoles is their role in the prevention of candidiasis in people with weak immunity, such as patients with chronic diseases, transplant patients, patients in the intensive care unit, and others. In these patients, the risk of developing fungal infections is increased; therefore, the administration of azoles can reduce the serious consequences of candidiasis.

- The contribution of research that focuses on the relationship between antimicrobial resistance and the COVID-19 pandemic is of utmost importance in understanding and combating these two serious threats to public health. Although different in nature, these two phenomena are closely related and mutually influence each other. Research on the relationship between them and the awareness of health professionals is essential to prevent serious health consequences.
- The pharmacological effects of compounds with a 2- and 5-nitroimidazole structure are described. In accordance with these effects, their importance has been shown as an important and promising area of research and development in pharmacotherapy, with significant potential in the treatment of various infectious and socially significant diseases (tuberculosis, HIV, and oncological diseases).

The candidate's research and relevant contributions are directly related to the specialty of the competition. According to the submitted academic transcript, Ch. Assist. Prof. Atanasova-Stamova has 4 citations in refereed and indexed publications and 1 citation in nonrefereed peer-reviewed journals. It should be noted that this is the minimum number of citations required to meet the requirements for the academic position of "associate professor". A reference to the Google Scholar database shows that as of May 2024, the publications of Atanasova-Stamova have been cited 31 times (h-index-3).

Assessment of teaching activities

Silvia Atanasova-Stamova, PhD has teaching experience of 06 years 4 months and 4 days as of 01.29.2024 (4 years 1 months and 14 days as assistant professor and 2 year 2 months and 20 days as chief assistant professor).

The candidate participates in the training of pharmacy and cosmetology students by conducting seminars and practical exercises in the following disciplines.

Pharmaceutical analysis 4th year, specialty "Pharmacy";

Pharmaceutical chemistry 3rd year, specialty "Pharmacy";

Analysis of cosmetic and perfumery products, specialty "Cosmetology";

Pigments and substances for sun protection in cosmetic products, specialty "Cosmetology";

It also participates in the conduct of semester exams in the listed disciplines. For the last 5 academic years, Ch. Assist. Prof. Atanasova-Stamova has a total of 2069 hours of classroom employment.

Conclusion

Silvia Atanasova-Stamova's scientific publications, necessary documents, and references show that she fulfills in a quantitative and qualitative aspect the recommended criteria and the requirements of Law on the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the development of the academic staff of the MU-Varna for obtaining the academic position "associate professor" in quantitative and qualitative aspects. The dissertation work, the topics that are included in the monographic work, the publications in peer-reviewed journals, and the reports presented at scientific forums, fully correspond to the subject of the announced competition. The quantitative and qualitative characteristics of Silvia Atanasova-Stamova's scientific publications, including the number of citations fully correspond to requirements for acquiring the academic position "associate professor". The academic workload, the teaching activity and the duration of the occupation of the position of "assistant professor"/"chief assistant professor" also meet the criteria.

Based on the comprehensive review of the presented scientific works, their significance, the theoretical and applied contributions contained in them, the educational and overall activity and taking into account the presence of full compliance of the scientometric and other indicators with the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the Rules for development of the academic staff of the University of Varna for obtaining the academic position "associate professor", I find it reasonable to vote **POSITIVELY** for chief assistant professor Silvia Atanasova-Stamova, Ph.D. to be appointed to the academic position "associate professor" in Department of "Pharmaceutical Chemistry", Faculty of Pharmacy at the Medical University 'Prof. Dr. P. Stoyanov" — Varna, in the field of higher education 7. Healthcare and sport, professional direction 7.3. Pharmacy in the scientific specialty "Pharmaceutical Chemistry".

Varna

Sincerely: .....

20.05.2024

/Assoc. prof. Iliya Zhelev Slavov, PhD/