

## **STATEMENT**

**Professor Dr. Petko Penkov Marinov, MD**

**Dean of the Faculty of Pharmacy, Medical University – Varna**

### **Regarding:**

Competition for acquiring the academic position "Associate Professor," specialty "Pharmaceutical Chemistry," the field of higher education 7. "Health and Sports," professional direction 7.3. "Pharmacy" to the Department of "Pharmaceutical Chemistry"—one, announced in SG issue 07/23.01.2024 for the needs of the Faculty of Pharmacy of the MU-Varna.

By order No. P-109-117/22.03.2024 of the Rector of MU-Varna, I was elected as a member of the Scientific Jury, and according to Protocol No. 1 of the first meeting of the Faculty of Science, I was appointed to prepare an opinion in the procedure for holding an academic position "associate professor" in "Pharmaceutical Chemistry" specialty. Pharmacist M. Sc. Nadya Vasileva Agova, PhD, is the only candidate currently taking part in the competition. The competition procedure has been followed. The submitted documents have been prepared following the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, and the Rules for the Development of the Academic Staff at the University of Medicine - Varna and the criteria for holding the academic position "associate professor" laid down there.

### **I. Analysis of the applicant's career profile:**

Pharmacist M. Sc. Nadya Agova was born in 1991. In 2016, she graduated as a Master of Pharmacy at the Faculty of Pharmacy of the Medical University of Varna. In 2019, she acquired the specialty "Analysis of medicinal products," and in 2022, she also acquired the specialty "Toxicology and toxicological analysis." After developing a dissertation work on the topic "Preparation and characterization of bexarotene derivatives with potential biological activity," she obtained a PhD. in the specialty "Pharmaceutical Chemistry" in 2019. She is fluent in English.

In 2016, she was elected as an assistant professor at the Department of Pharmaceutical Chemistry at the Faculty of Pharmacy at the Medical University - Varna, and in 2020, she was elected as the chief assistant professor.

The general work experience and teaching experience of ch. assistant Nadya Agova is eight years. She actively participates in theoretical and practical work of pharmaceutical chemistry to pharmacy students' and in an elective discipline—Chemistry of Antibiotics. She also teaches the students in the master's program in Cosmetology.

Takes part in the semester exam sessions and scientific projects of the Medical University - Varna. She presents the results of her scientific activity in national and international scientific publications and publishes a monograph. It also takes part in issuing study aids for students.

### **II. General description of the submitted materials for the competition.**

Nadya Agova, PhD participates in the current competition with the necessary documents, corresponding to the Law on the Development of the Academic Staff in the

Republic of Bulgaria and the Regulations for developing the academic staff at the University of Medicine - Varna.

Submitted: Application for admission to participation in the competition, curriculum vitae, diplomas for completed higher education and for the obtained PhD degree, diplomas for specialties "Analysis of medicinal products" and "Toxicology and toxicological analysis", certificate of internship in the specialty and teaching experience, academic reference for a study load of up to 518 hours per year from 2018 to 2023 (average 361 hours/year), medical certificate and criminal record certificate, habilitation work - monograph "Systematic review of the properties and action of nutritional supplements. Safety and quality.", declaration of author consent, a summary of monographic work in Bulgarian and English, copies and summaries of publications in Bulgarian and English, reference to scientific contributions, list of participations in scientific forums in Bulgaria and abroad, separation protocol in connection with the monographic work, certificates for participation in research projects.

### **III. Evaluation of the scientific works of the candidate for overall academic development.**

In the current competition, Nadya Agova presents 24 full-text scientific publications in addition to those for acquiring a PhD degree. Six of them are in scientific editions, refereed and indexed in world-renowned databases with scientific information, 17 in non-refereed journals with scientific review or published in edited collective volumes, and 1 in scientific journals and collections, beyond the minimum scientometric requirements for holding the academic position "associate professor."

In the published full-text scientific publications Pharmacist M. Sc. Nadya Agova is:

- First author in 14
- Second author in 7
- Third and consecutive author in 3

The total number of points from the published articles is 239 for indicator group D.

Pharmacist M. Sc. Nadya Agova is in the author team of 3 university textbooks. They form the basis of pharmacy student training.

The candidate has extensive experience in the development and implementation of scientific projects. Participated in 7 national scientific or educational projects:

- Project #23009 "Design, production and research of isatin hybrid molecules with suspected broad-spectrum antimicrobial activity and potential application in implantology";
- Project #20008 "Investigation of the toxicity of bexarotene hydrazones by applying the in vitro and in vivo method";
- Project #29 "Prediction of the toxicity of newly synthesized hydrazide and hydrazone derivatives with potential antineoplastic effect";
- Project #19026 "Determination of the antimicrobial activity of newly synthesized nitroimidazole derivatives with potential application in transplantation medicine";
- Project #18019 "Synthesis and characterization of new nitroimidazole derivatives with potential biological effect";
- Project #18018 "Determination of biological activity and antioxidant properties of neosynthesized bexarotene analogs";

- Project #17011 "Synthesis and characterization of a new generation of retinoids".

Participation in 38 scientific forums, seven international and 31 national, are also presented.

The scientific works of Nadya Agova treat current problems, possess the necessary scientific and applied merits, and make a significant contribution in the field of the announced competition for associate professor in "Pharmaceutical Chemistry."

### **General characteristics of scientific production and publication activity;**

The scientific production presented in the competition reflects the results of the following:

- The search for new drugs and approaches to therapy for oncological diseases, such as bexarotene analogs with potential pharmacological activity. A three-step synthetic approach for preparing new hydrazide-hydrazone derivatives of bexarotene has been developed.
- Hydrazones and their derivatives containing azomethine functionality represent an essential class of compounds with a broad spectrum of pharmacological effects. The most crucial property of hydrazones is their high physiological activity.
- The structural characterization of the newly obtained compounds using instrumental analysis methods - IR-spectroscopy, <sup>1</sup>H-NMR-analysis, and mass spectrometry.

### **Scientific contributions of the candidate**

In the scientific developments of Pharmacist M. Sc. Nadya Agova has scientific-theoretical and applied-practical contributions.

A contribution point is the examination of the molecular properties and bioactivity of newly synthesized bexarotene derivatives. (Article Γ7-2, Γ8-2, Γ8-7, Γ8-9, Project FN #20008, Project with contract #434/2019 - Prof. Dr. A. Zlatarov University, Burgas)

The development and validation of a rapid, precise, and accurate HPLC method for identifying bexarotene and its derivatives alone and in mixtures is contributing. (Article D7-1, D8-1, D8-4, Project FN #17011)

An approach has been developed to predict the potential biological activity of newly obtained compounds. It is evaluated using a software model of mathematical prediction. The alternative in silico toxicity prediction methods is based on the relationship between chemical structure, reactivity, and toxic effects that drugs may cause in living organisms. (Article D8-3, D8-9, Project FN #18018)

The radical-binding activity and antioxidant potential of newly synthesized structures, for which literature data are currently missing, were experimentally evaluated. (Article D7-3, D8-10, Project FN #18018)

A synthetic scheme for preparing new derivatives of the third-generation retinoid bexarotene has been developed. (Article D8-2, D8-11, D8-13, D8-14)

The antibacterial activity of a newly synthesized bexrotene derivative against clinical isolates of *Escherichia coli* and *Staphylococcus aureus* was investigated.

Methods have been developed to determine the minimum inhibitory and bactericidal concentration in a liquid nutrient medium, which shows that all investigated solutions have antimicrobial potential. (Article D8-6).

The antibacterial and antifungal activity of three types of mouthwash was analyzed. (Article D7-4).

In light of the COVID-19 pandemic and the search for new treatment approaches and therapies, article D8-8 tracks the use of macrolide antibiotics.

Changes in the sales of two medicinal products - omeprazole and famotidine - were also tracked. (Article D7-6).

A study was conducted on consumer attitudes towards the use of dietary supplements. (Article D7-5).

The scientific literature was analyzed regarding the risk of liver damage from the use of dietary supplements (Article D8-15).

#### **IV. Evaluation of the monographic work.**

The monograph "Systematic Review of the Properties and Action of Nutritional Supplements. Safety and Quality" deals with fundamental issues in using nutritional supplements. The content is structured in three chapters. The first chapter is devoted to the classification of nutritional supplements and the role of vitamins, antioxidants, minerals, and amino acids as essential nutritional supplements, the interaction between them, individual characteristics, recommended intake, potential benefits and risks of their use, and the risks of their joint use with drugs products. The second chapter thoroughly examines the regulatory framework related to the production, distribution, and Application of nutritional supplements. It focuses on the main points in European, Bulgarian, and Russian legislation. The prohibited substances, contaminants, and methods for their identification are indicated. In the third chapter, the results of the studies regarding market trends regarding nutritional supplements and consumer attitudes toward the use of nutritional supplements in the city of Varna are indicated. The eating behavior and eating habits of students from Bulgaria and Russia in the conditions of COVID-19 were also analyzed.

The bibliography includes 285 literary sources. The monograph has a modern scientific applied nature and includes an original contribution to the field. The presented monograph fully meets the criteria for a monographic work, as reflected in Law on the Development of the Academic Staff in the Republic of Bulgaria.

#### **V. Reflection (citation) of the candidate's publications in the national and foreign literature.**

Nadya Agova has been cited in scientific publications six times. The author has a total of 50 points in indicator group D.

#### **VI. Complex, qualitative evaluation of the teaching method and teaching activities.**

Nadya Agova, PhD earns the respect of her students and colleagues. She was chosen as the chief assistant professor. Delivers lectures, conducts practical exercises, participates in semester exam sessions, and possibly scientific projects. She acquires two specialties. Has mastered and successfully applies experimental methods in work. The candidate has active scientific profiles in Google Scholar, Research Gate, ORCID, and Researcher ID. She publishes

the results of her scientific activity in renowned scientific publications. The scientific indicators of ch. assistant Nadya Agova have 446.5 points.

#### **VII. Critical notes and recommendations**

I have no critical remarks about the candidate. I recommend that she continue her research and pass on her experience and knowledge to her students and interns.

#### **VIII. Conclusion**

Based on the materials I was provided in the competition, Nadya Vasileva Agova, PhD fully meets the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria, the Rules for its Application, and the Rules for the Development of the Academic Staff at the University of Medicine - Varna and the criteria laid down therein for taking the academic position "associate professor". On this basis, I give my positive assessment of the choice of Nadya Agova, PhD for an associate professor in the field of higher education 7. Health care and sports, professional direction 7.3 Pharmacy at the Department of Pharmaceutical Chemistry for teaching in the discipline "Pharmaceutical Chemistry" and I recommend the respected members of the Scientific Jury to vote positively for her selection.

Prepared the statement:

/Prof. Petko Marinov, MD, PhD/

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