

OPINION

by Prof. Dr. Denitsa Yancheva Pantaleeva, Institute of Organic Chemistry with Centre of Phytochemistry, BAS

on the materials submitted for participation in the competition
for the academic position of 'Professor'
at the Faculty of Chemistry, Plovdiv University "Paisii Hilendarski"
by field of higher education

4. "Natural Sciences, Mathematics and Informatics, professional field",
professional field "Chemical Sciences" - 4.2, scientific specialty "Organic Chemistry,
Bioorganic Chemistry" for the needs of Department of Organic Chemistry, CBPE

1. General presentation of the procedure and the candidate

For participation in the announced competition for 'professor', published in the State Gazette, №96/11.11.2025, the only candidate admitted is Assoc. Prof. Dr. Stoyanka Nikolova Atanasova from the Faculty of Chemistry at Plovdiv University "Paisii Hilendarski".

Assoc. Prof. S. Atanasova completed her higher education at Shumen University "Bishop Konstantin Preslavski" with a master's degree in chemistry in 1996. She then continued her education as a doctoral student at the University of Economics - Varna (1999-2003), under the scientific guidance of Prof. St. Minchev, DSc. Since 2004, S. Atanasova has been a lecturer at the Faculty of Chemistry, at Plovdiv University "Paisii Hilendarski," Department of Organic Chemistry, where she has successively held the positions of senior assistant and associate professor (associate professor since 2012).

The set of materials submitted by Assoc. Prof. Dr. S. Atanasova is in accordance with the Regulations for the Development of Academic Staff at the Faculty of Chemistry, Plovdiv University "Paisii Hilendarski," and meets the criteria for the academic position of "professor."

For the competition, Assoc. Prof. Dr. S. Atanasova submitted a total of 28 scientific articles and 3 textbooks, which do not repeat materials presented in previous competitions. The citations of the candidate's publications from the last 5 years, submitted for the competition, are 296. The total citation index of Assoc. Prof. S. Atanasova (h-index) is 12, based on data from Scopus, after excluding self-citations of all co-authors.

The scientific works can be classified by their respective Q factors as follows: 22 publications in Q1 category journals and 6 publications in Q2 category journals. Indicator C includes 8 publications, 7 of which are in Q1 category journals and one in a Q2 category journal. Indicator D includes 20 publications. Documents are also presented for a total of 1981 hours of classroom teaching, supervision of 21 master's students and 6 doctoral students, and data on participation in 8 scientific projects (including 2 under the leadership of Assoc. Prof. S. Atanasova). The candidate also submitted an abstract of the materials, a habilitation report and a self-assessment of the contributions of the scientific works, evidence of participation in scientific forums, editorial boards, reviewing activities for journals, training and specializations in the subject area of the competition.

The documents are clearly and systematically organized and support all necessary categories for evaluating the candidate's performance in the competition.

2. General description of the candidate's activities

The scientific papers submitted for participation in the competition show that the research interests of Assoc. Prof. S. Atanasova are in the field of organic and bioorganic chemistry with a focus on obtaining and studying compounds of pharmacological interest. The candidate's research efforts encompass two areas: (i) design and synthesis of new compounds exhibiting spasmolytic, anti-inflammatory, and antimicrobial activity; (ii) obtaining silver nanoparticles and studying their biological action.

The main contributions of Assoc. Prof. S. Atanasova in the first area are related to the development of an appropriate modification strategy (targeted design) and the discovery of synthetic approaches for obtaining new benzamide derivatives of mebeverine and isoquinoline analogues; establishing their spasmolytic activity; clarifying their inhibitory activity in the denaturation of serum albumin as an *in vitro* model of anti-inflammatory action; clarifying the relationship between the structure of the compounds and their biological activity; prediction of physicochemical characteristics affecting bioavailability, drug similarity, and interaction with albumin; outlining guidelines for future modification to improve the pharmacological activity of the compounds. The design, production, and study of the antispasmodic, anti-inflammatory, and antimicrobial activity of the new mebeverine and isoquinoline derivatives are discussed in detail in the habilitation report of Assoc. Prof. PhD S. Atanasova. The aim of the research is to obtain new compounds with improved solubility and pharmacological activity compared to mebeverine and papaverine, used as spasmolytics in diseases such as irritable bowel syndrome. The strategy for structural modification includes replacing the ester group with an amide group, introducing anthranilic and phenylalkyl fragments, and an additional nitrogen atom. A pronounced relaxing effect on smooth muscles has been established with the application of the newly obtained compounds, combined with an anti-inflammatory effect and antimicrobial activity.

With regard to the preparation of silver nanoparticles and the study of their biological effects, the most significant contributions include the development of a rapid and environmentally friendly method for the formation of silver nanoparticles using galactose or fructose as a reducing agent; the application of the method for obtaining nanoparticles loaded with mebeverine, two synthesized precursors thereof, and phenindione. The nanoparticles obtained made it possible to determine the main physicochemical characteristics of the loaded nanoparticles, the drug release time, and to investigate their antispasmodic and anticoagulant effects for the first time. The results of the studies showed successful functionalization and stabilization of the metal nanoparticles through monosaccharide molecules, successful modulation of the drug release time by varying the saccharide, improved antispasmodic activity of nanoparticles loaded with mebeverine compared to the free drug, improved anticoagulant activity of phenindione when immobilized on silver nanoparticles, and key characteristics related to the safe application of the obtained nanoparticles as drug carriers. The possibilities for obtaining silver nanoparticles from plant extracts of the microalgae *Spirulina platensis* and *Chlorella vulgaris* were also studied. A change in the fatty acid composition, tocopherol content, antimicrobial and anti-inflammatory effect was found depending on the composition of the starting extract.

It can be summarized that the contributions described above are both fundamental in nature and have significant potential for practical application in medical practice. The research of Assoc. Prof. S. Atanasova falls within a highly topical field, which is supported by the fact that her scientific publications have been published mainly in *Q1* journals, as well as by the significant number of citations of her scientific works reported over the last 5 years – 296.

A review of the materials submitted for the competition reliably demonstrates the key role of Assoc. Prof. S. Atanasova in the research, as she is the lead author or corresponding author in a significant number of the publications and conference reports. The supervision of scientific projects, master's and doctoral students on topics related to the scientific developments discussed

above is also good evidence of the active and leading participation of Assoc. Prof. Dr. S. Atanasova.

As can be seen from the attached reference, the candidate Assoc. Prof. S. Atanasova has extensive teaching experience in the field of organic and bioorganic chemistry, including in English, complemented by active training of students and doctoral students in the preparation of theses and dissertations.

3. Critical comments and recommendations

I have no critical comments on the submitted materials.

CONCLUSION

The documents and materials submitted by Assoc. Prof. Dr. Stoyanka Nikolova Atanasova from the Institute of Organic Chemistry with Centre of Phytochemistry, BAS, meet all the requirements of the Law for the Development of Academic Staff in the Republic of Bulgaria, the National regulations for its implementation, and the respective Regulations for its implementation of the Faculty of Chemistry, Plovdiv University "Paisii Hilendarski".

The candidate in the competition has submitted a significant number of scientific works published after the materials used in the defense of her PhD thesis and the preceding competition for the academic position of Associate Professor. The candidate's works contain original scientific and applied contributions that have received international recognition, all of them have been published in journals of international academic publishers. The scientific and teaching qualifications of Assoc. Prof. Dr. Stoyanka Nikolova Atanasova are unquestionable.

The results achieved by Assoc. Prof. Dr. Stoyanka Nikolova Atanasova in the scientific research and teaching activities fully comply with the specific requirements of the Regulations of the Faculty of Chemistry, Plovdiv University "Paisii Hilendarski" for implementation of the Law for the Development of Academic Staff in the Republic of Bulgaria.

Therefore, I confidently recommend to the members of the Scientific Jury and the Faculty Council of the Faculty of Chemistry, Plovdiv University "Paisii Hilendarski" to vote "YES" for the election of Assoc. Prof. Dr. Stoyanka Nikolova Atanasova to the academic position of "Professor" in the field 4. "Natural sciences, mathematics and informatics, professional field", professional field "Chemical sciences" - 4.2, scientific specialty "Organic Chemistry, Bioorganic chemistry".

07.03.2025 r.

Jury member:

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(Prof. Dr. Denitsa Pantaleeva)