



OPINION

By Assoc. Prof. Bissera Pilicheva, PhD

Head of the Department of Pharmaceutical Sciences, Medical University of Plovdiv;
Chairman of the Scientific jury, appointed by Order № R-1182/05.05.2023 by the Rector of
Medical University of Plovdiv

REGARDING: Competition for the academic position "Associate Professor" in Pharmaceutical technology, professional area 7.3. Pharmacy, announced in State Gazette, issue 19/28.02.2023 for the needs of the Department of pharmaceutical sciences, Faculty of pharmacy, Medical University of Plovdiv.

The only candidate in the competition is Chief Assistant Professor Plamen Dimitrov Katsarov, PhD from the Department of Pharmaceutical Sciences of the Faculty of Pharmacy at the Medical University of Plovdiv. To participate in the competition, the candidate has submitted a complete set of documents in accordance with the requirements of the Regulations for Academic Development at MU-Plovdiv. All documents have the necessary details and are duly certified, precisely arranged and very well systematized, and in full compliance with the Act for the Development of the Academic Staff in the Republic of Bulgaria.

ANALYSIS OF THE CAREER PROFILE OF THE APPLICANT

Plamen Katsarov obtained a master's degree in pharmacy at the Medical University of Plovdiv in 2012. In 2017, the candidate was awarded a PhD degree in "Pharmaceutical technology and biopharmacy" at the MU-Plovdiv after defending a dissertation on the topic "Polymer microspheres with doxylamine and pyridoxine for nasal administration". In 2018, the candidate acquired a specialty in "Pharmaceutical Technology with Biopharmacy".

The professional development of Plamen Katsarov started in 2012 after successfully passing a competition for the appointment of assistant professor at the Department of Pharmaceutical Sciences of MU-Plovdiv. Since 2018, the candidate holds the position of chief assistant professor and teaches the course "Pharmaceutical Technology and Biopharmacy" to Bulgarian and foreign students. From 2016 until now Plamen Katsarov holds the position of researcher at the Phytoproduct Standardization Laboratory of the Technological Center for Emergency Medicine and the Research Institute of the Medical University - Plovdiv (RIMU). The candidate is an academic mentor of pharmacy students under the "Student Internships - Phase 1 and Phase 2" program of the Ministry of Education and Culture.

Plamen Katsarov is a member of the Bulgarian Pharmaceutical Union and the YSA "Asclepius" at the MU-Plovdiv. He is fluent in English and German.

The analysis of the applicant's biographical data shows that his career profile and professional development fully correspond to the announced competition for "Associate Professor" in Pharmaceutical technology and biopharmacy.

EVALUATION OF THE SCIENTIFIC WORK OF THE APPLICANT

Plamen Katsarov participated in the current competition with a scientific production that meets and even exceeds the minimum national requirements and those of the MU-Plovdiv for holding the position of associate professor (table 1).

The candidate has defended a thesis on the topic "Polymer microspheres with doxylamine and pyridoxine for nasal administration", which covers the required 50 points under indicator group A.

Plamen Katsarov is the co-author of a monograph entitled "Polysaccharide microcarriers for drug delivery", 2023, ed. "Lax Book", ISBN: 978-619-189-217-4, which has the value of a habilitation work (100 points according to group B indicators). The monograph has a volume of 266 pages, with a scientific review by two established specialists in the field, and with an exhaustive bibliography, including 759 literary sources. The monograph has significant scientific value, as it not only confirms the accumulated knowledge in the field of polymer microsystems for drug delivery, but also builds with new knowledge about current approaches and innovative strategies for their preparation and characterization. The generalizations made in the paper rest both on a thorough analysis of the literature and on the author's experimental data.

For participation in the current competition Plamen Katsarov has presented 28 scientific works, of which:

- 12 full-text publications published in journals with IF (JCR);
- 1 full-text publication in a Scopus and Web of Science-referenced publication without IF;
- 13 full-text publications published in non-refereed editions;
- 1 monograph (habilitation thesis);
- 1 chapter of a collective monograph.

In indicator group D, 26 publications are included, of which 12 are full-text articles in journals with IF. In 4 of the publications, the candidate is the first author. The total number of points under indicator group D is 247.67, which significantly exceeds the required 210 points. According to the Regulations for Academic Development at MU-Plovdiv, a mandatory condition for professional area 7.3. Pharmacy is the presence of 10 articles in Scopus/Web of Science refereed journals (excl. those beyond PhD), of which 6 articles with IF. Both requirements are met: Plamen Katsarov participated in the competition with 13 full-text articles referenced in Scopus, of which 12 were with IF. The total IF of the articles is 36,671.

A reference to the month of April 2023 shows that the scientific production with which the candidate participated in the competition was cited 128 times in referenced sources (not counting the self-citations of all authors), which brings a total of 1920 points and exceeds the minimum requirement of 12 citations in foreign refereed publications and 300 points by indicator group D.

The scientific activity of Plamen Katsarov is funded by 7 scientific projects, of which 1 is funded by the EU, and the remaining 6 are university projects, which exceeds the required minimum of 2 participations in university or national scientific projects.

The results of the research work of Plamen Katsarov have been presented at 21 scientific forums in the country and abroad. The subject matter of the scientific reports overlaps that of the publications, which shows a systematic scientific development in the direction of the current competition.

TEACHING ACTIVITIES ASSESSMENT

The teaching experience of Plamen Katsarov, according to the presented reference, has a total of 10 years, of which 5 years as an assistant professor and 5 years as a chief assistant professor in the scientific specialty of the current competition. The educational and teaching activities of the candidate include practical exercises in Pharmaceutical technology, participation in examination committees and certification of pre-graduate internship of students. The average academic load of the candidate significantly exceeds the norm for a non-habilitated lecturer.

The candidate has demonstrated a high level of commitment to teaching students, leading to the realization of joint scientific publications. He participated as an academic mentor to pharmacy students under the "Student Internships - Phase 1 and Phase 2" program of the Ministry of Education and Science. Plamen Katsarov is also a participant in 2 educational projects aimed at increasing the capacity of teachers. Within the framework of the OMNIA project, financed under the "Modernization of Higher Education" procedure, the applicant participated in the development of new curricula for two new specialties from the unregulated professions in professional area 7.3 Pharmacy.

Plamen Katsarov has acquired a specialty in "Pharmaceutical technology and biopharmacy" and is a co-author of 2 teaching resources on Pharmaceutical technology part II and on Biopharmacy and pharmacokinetics, with which the total number of points for group E indicators is 205 and significantly exceeds the minimum requirement of 50 points.

According to the requirements of the Regulations for Academic Development at MU-Plovdiv, the mandatory study load for holding the position of associate professor is 720 hours (360 points). For the last two academic years (2020/2021 and 2021/2022), the academic workload of Plamen Katsarov of practical exercises is a total of 1415 hours (1147 hours of Bulgarian language teaching and 268 hours of English language teaching), which corresponds to 707.5 points and exceeds almost twice the required minimum for indicator group G.

All the above gives me reason to give a high grade of the teaching activities of the candidate Plamen Katsarov.

Table 1. Minimum national requirements under Art. 2b of Act for the Development of the Academic Staff in the Republic of Bulgaria for the academic position "Associate Professor" and indicators of the candidate Plamen Katsarov

Group of indicators	Minimum requirements	Applicant's indicators
A	50	50
B	-	-
C	100	100
D	210	247,67
E	300	1920
F	50	205
G	560	1107,5
Total	1270	3630,17

ASSESSMENT OF THE APPLICANT'S SCIENTIFIC CONTRIBUTIONS

The subject matter of Plamen Katsarov's scientific works is in several directions. Much of the candidate's work has focused on the development and characterization of polymeric microcarriers as drug delivery systems. A model drug-delivery system for simultaneous delivery

of doxylamine and pyridoxine based on chitosan with optimal technological and biopharmaceutical characteristics is proposed. For the first time, the simultaneous incorporation of equivalent amounts of two medicinal substances - doxylamine and pyridoxine - into polymer microspheres by the spray drying method has been achieved. Chlorhexidine-loaded chitosan microparticles with optimal mucoadhesive properties and delayed drug release were developed for potential incorporation into a solid dosage form for buccal administration. An approach was proposed to achieve modified release of chlorhexidine from chitosan microspheres based on cross-linking of the polymer carrier and subsequent spray drying. A tablet dosage form for buccal administration was developed based on the optimal microparticle model. Microcapsules of gum arabic and maltodextrin with included lavender oil (*Lavandula angustifolia* Mill.) and peppermint oil (*Mentha piperita* L.) were obtained by the spray drying method. Optimal conditions for microencapsulation of the two essential oils were derived, ensuring high yield and high oil content in the obtained particles. For the first time, the influence of the type of essential oil – lavender and peppermint oil – on the process of microencapsulation with gum arabic and maltodextrin by the spray drying method was studied. A comparative analysis was made of microcapsule models obtained under identical technological conditions with the two oils in terms of their structural-morphological characteristics, inclusion efficiency and stability.

A part of the candidate's work is related to the extraction of polysaccharides of natural origin and the study of their biological activity with a view to their potential application alone as therapeutic molecules or as polymeric carriers in the production of drug-delivery systems. Alginate was isolated from *C. crinita* algae, harvested from the Bulgarian Black Sea coast by acid extraction at elevated temperature with subsequent alkalization and precipitation with ethanol. The chemical composition and structure of alginate obtained from *C. crinita* were identified for the first time using infrared spectroscopy (FTIR), size exclusion chromatography equipped with multi-angle laser light scattering (SEC-MALS) and nuclear magnetic resonance (¹H NMR). The biological effects of isolated alginate were also investigated in induced paw inflammation in rats and in a model of acute peritonitis. For the first time, fucoidan was isolated from *C. crinita* algae harvested from the Bulgarian Black Sea. The purity of the isolated fucoidan was determined by quantitative analysis of total polyphenols by the method of Singleton and Rossi, as well as the content of proteins by the method of Bradford. A polysaccharide was isolated from the leaves of *Plantago major* L. And its structure was investigated by anion-exchange chromatography (HPAEC), size-exclusion chromatography equipped with multi-angle laser light scattering (SEC-MALLS), and infrared spectroscopy (FTIR). For the first time, a process of enzymatic hydrolysis of polysaccharides from *Plantago major* leaves to obtain low molecular fraction oligosaccharides is reported. The prebiotic potential of the obtained fractions against the lactic acid probiotic strains *Lactobacillus acidophilus* N, *L. plantarum* S30, *L. sakei* S16 and *L. brevis* S27 was established.

Publications aimed at the development of analytical methods allowing the simultaneous determination of more than one medicinal substance included in the dosage form occupy a significant share in the candidate's scientific output. The candidate's studies in this thematic direction are aimed at developing and validating spectrophotometric methods for the quantitative analysis of medicinal substances, based on modern chemometric separation techniques such as: Partial least squares (PLS), Multivariate curve resolution-alternative least squares (MCR-ALS) and the Net analyte signal-based method (NAS).

All of the above undoubtedly shows the significant contribution of the applicant Plamen Katsarov for the development of pharmaceutical science.

CONCLUSION

Chief Assistant Professor Plamen Katsarov is a specialist with a wide range of scientific interests and solid teaching experience. His research activity has a wide thematic scope and is focused on topical issues in pharmaceutical science. His scientific works contain valuable scientific and applied contributions. According to the materials and documents submitted to me for review, I believe that all mandatory indicators of the criteria to the current minimum requirements have been met, and some have even been significantly exceeded.

Based on my general assessment, I believe that Plamen Katsarov meets all the requirements for holding the academic position "Associate Professor", reflected in Act for the Development of the Academic Staff in the Republic of Bulgaria and the Regulations for its implementation and according to the Regulations for Academic Development at MU-Plovdiv".

In view of the above, I confidently give my **positive opinion** and propose to the esteemed Scientific Jury Chief Assistant Professor Plamen Katsarov to be elected to the academic position of "Associate Professor" in "Pharmaceutical technology" in the professional area 7.3. Pharmacy at the Department of Pharmaceutical sciences at the Faculty of Pharmacy of Medical University of Plovdiv.

Заличено на осно жние

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Plovdiv

Reviewer:

(Assoc. prof. Bissera Pilicheva, PhD)