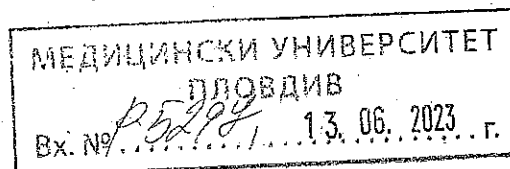


To : Chairman of the Scientific Jury
Determined by Order of the Rector of MU-
Plovdiv No P-1126/ 05.05.2023



SCIENTIFIC OPINION

by Prof. Virginia Yordanova Tzankova, PhD
Faculty of Pharmacy, Medical University - Sofia

In capacity of member of the scientific jury appointed by the Rector of MU-Plovdiv with ordinance No R-1126/ 05.05.2023 related to the procedure for academic position "Associate Professor" in "Technology of pharmaceutical forms with biopharmacy", field of higher education 7. « Health and sport» by professional field 7.3.« Pharmacy» for the needs of teaching on "Technology of pharmaceutical forms I part"; « Technology of Pharmaceutical Forms Part II" and "Bio pharmacy and Pharmacokinetics" at the Department of Pharmaceutical Sciences, Section "Technology of Pharmaceutical Forms and Biopharmacy" of MU-Plovdiv

The only candidate for position of «ASSOCIATE PROFESSOR» announced in the State Gazette, No. 19/28.0 2.2023 years is a senior assist. prof. Plamen Dimitrov Katsarov, PhD from the Department of Pharmaceutical Sciences, Section "Technology of Pharmaceutical Forms and Biopharmacy" at MU-Plovdiv. For the competition, Dr. Plamen Katsarov has submitted all the necessary documents in accordance with the requirements of the Law on the Development of the Academic Staff of the Republic of Bulgaria, the Rules of Procedure the structure and activity of the Medical University – Plovdiv and the Rules for Academic Development at MU-Plovdiv (2021). All presented materials are precisely described and clearly arranged.

I. Analysis of the candidate's career development

Dr. Plamen Dimitrov Katsarov has acquired a Master's degree in Pharmacy at MU-Plovdiv in 2012. Since 2013 he has been enrolled as a PhD student in the doctoral program "Technology of Pharmaceutical Forms and Biopharmacy" at MU-Plovdiv, where in 2017 he successfully defended a dissertation entitled "Polymer microspheres with pyridoxine and doxylamine for nasal use" and acquired the educational and scientific degree "Doctor (PhD)".

After graduation, he worked consecutively as a Master of Pharmacy in an open-type pharmacy (2013 – 2019), as a researcher at the Laboratory for Standardization of Phytoproducts (2016-2019), as a academic mentor of Pharmacy students under the Program "Student Practices – Phase 1" and "Student Practices – Phase 2" of the Ministry of Education and Science, at MU-Plovdiv (2016-2022), as a researcher at the Pharmaceutical Innovation for Personalized Medicine Division (2020 – present). Since 2012, he has been a consecutively assistant and a senior assistant professor in "Technology of pharmaceutical forms with biopharmacy".

Since 2023, she has been a senior associate of PSNIIR-MUP, category Analytical Specialists at the "Research Group on Biomaterials and Nanostructures for Drug Delivery".

In 2018, he has acquired a specialty in "Technology of Medicines with Biopharmacy".

Dr. Katsarov is a specialist with interests in the field of Technology of pharmaceutical forms. In the period 2013 - 2022 he carries out trainings and short-term specializations in the field of his scientific interests, including Erasmus+ mobility at Comenius University, Bratislava, Slovakia.

The teaching activities of Dr. Katsarov are in the field of "Technology of pharmaceutical forms and Biopharmacy" and these activities corresponds to the scientific field in which a competition was announced. He leads classes for students of Pharmacy, participates in the development of programs and training tests on "The Technology of Pharmaceutical Forms and Biopharmacy" within the framework of regular training for students in the specialty "Pharmacy" for the educational and qualification degree "Master of Pharmacy".

II. General description of the submitted materials for the competition

All documents required by the law and the regulations related to the competition are presented correctly. The documents include: CV, diploma for educational and scientific degree "Doctor (PhD)", diploma for specialty "Technology of pharmaceutical forms", administrative documents (medical certificate, criminal record certificate, etc.), list of scientific publications, monograph, list of participation and management of scientific projects, list of participations in scientific forums, list of citations, certificates of membership in scientific societies, list of contributions, etc.

III. Evaluation of the candidate's scientific papers for comprehensive academic development

For the competition, Dr. Katsarov presents a list of **27** real scientific publications. Of these, **13** are published in scientific journals, referenced and indexed in world-famous databases of scientific information (Scopus and Web of science), among them: *Marine Drugs* (IF 6.085); *Viruses* IF2021=5.818; *Molecules* IF2021=4.927, etc.

The other scientific papers (**14**) have been published in refereed international Bulgarian journals and as sections of monographic works.

Dr. Katsarov is the first author in eight of the presented publications; *h* index: **7**. The research activity includes participation in **21** national University scientific forums and **4** international scientific events.

Dr. Plamen Katsarov has participated in the research teams of **11** scientific projects, including 5 internal University projects at MU-Plovdiv, projects funded by the Operational Program "Science and Education for Smart Growth" at the Ministry of Education and Science; National Recovery and Resilience Plan, funded by the European Union – NextGenerationEU, National Scientific Program "Young Scientists and Postdoctoral Students funded by the Ministry of Education and Science, etc.

The requirement for participation in at least **2** scientific/ educational projects under the Rules of Mu-Plovdiv is met.

The analysis and evaluation of the scientific indicators of Ch. ace. Plamen Katsarov shows that they meet the quantitative criteria set out in the regulations of the Medical University - Plovdiv for acquiring the academic position "Associate Professor".

The research activity of Dr. Katsarov is focused in the following main directions:

1. Preparation and characterization of polymeric microcarriers as drug supplying systems.
2. Extraction of polysaccharides of natural origin and study of their biological activity.
3. Development of spectrophotometric methods for the quantification of medicinal substances.

Strand contributions 1.

The compatibility between the medicinal substances doxylamine and pyridoxine and the polymeric carrier chitosan (non-crosslinked and crosslinked with glutaraldehyde) is preserved. An optimal model of chitosan microparticles characterized by high load efficiency, good mucoadhesive properties and delayed release of the incorporated doxylamine and pyridoxine with minimal initial burst-effect is derived. The results obtained can be used in developing a technological process to obtain microspheres as drug-supplying systems for nasal application.

Chlorhexidine-loaded chitosan microparticles with optimal mucoadhesive properties and delayed drug release were developed. A tablet formulation for buccal administration was obtained based on the developed microparticles. The proposed optimal model of mucoadhesive tablets containing chlorhexidine-laden microparticles is a promising buccal formulation, ensuring prolonged release of the medicinal substance included in them.

For the first time, the influence of the type of essential oil – lavender and peppermint oil – on the microencapsulation process with Arabian gum and maltodextrin by the spray drying method was studied. The type of essential oil was found to significantly affect the encapsulation process and final characteristics of the particles. The studies carried out demonstrate that spray drying is a successful approach to incorporating liquid, volatile substances into solid part structures with satisfactory rheological characteristics that can be used in the development of solid dosage formulations.

Strand contributions 2.

Studies under this thematic area are aimed at optimizing methods for the extraction of polysaccharides of natural origin. The results obtained show that alginate, isolated from Bulgarian brown algae, has a pronounced anti-inflammatory activity. These biological effects, as well as its established advantages as a drug carrier, make it a promising polymer carrier for the development of micro- and nanodrug structures with anti-inflammatory action.

For the first time, an enzymatic hydrolysis process of polysaccharides from *Plantago major* leaf has been reported to obtain low molecular weight fractions oligosaccharides. The prebiotic potential of the obtained fractions relative to several lactic acid probiotic strains was established.

Strand 3 contributions

Studies and contributions in this subject line are aimed at developing and validating spectrophotometric methods for the quantitative analysis of medicinal substances based on modern chemometric separation techniques.

The analysis of the research activity of Dr. Katsarov shows that the presented scientific articles found a wide resonance in the specialized scientific literature. The reference of the scientific contributions is consistent with the published results.

IV. Evaluation of monographic work or equivalent publications submitted for the competition for JSC "Associate Professor"

The monographic work (co-authored) on "Polysaccharide microcarriers for drug delivery" was published in 2023 and contains 280 pages (ISBN 978-619-189-217-4). The topic and volume of monographic work fully comply with the legal requirements.

The monographic paper presents approaches for the inclusion of medicinal substances in micro-sized partial structures, for improving their biopharmaceutical and pharmacokinetic characteristics and achieving better therapeutic effectiveness. The focus is natural polysaccharides as drug microcarriers, characterized by a high degree of bio tolerance, biodegradability and lack of toxicity. The monograph defines basic principles of microparticle drug design, proposes technological solutions to some problematic aspects of different routes of application, and outlines future directions in the development of polymer drug microcarriers.

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

A total of **128** citations from publications in specialized editions (scientific editions, referenced and indexed in world-famous databases of scientific information (Scopus and Web of science)) were established. The high citation of the publications of Dr. Plamen Katsarov show interest in scientific developments and their relevance.

VI. Complex, qualitative assessment of scientific, methodological, and teaching activities, incl. scientific management of students, PhD students, postgraduates

The reference for the workload of Dr. Katsarov for the last 3 years is 889 h, 983.3 h, and 960 h, respectively. It shows an extremely high academic workload that exceeds the norm for non-habilitated teachers (360 h). The candidate conducts practical classes in Bulgarian and English, conducts colloquia and participates in practical and theoretical examinations. His latest academic appraisal is very good.

VII. Critical remarks and recommendations

I have no critical comments about the candidate.

VIII. General assessment of the applicant's compliance with the minimum national requirements under art. 2b, para. 2 and 3, respectively the requirements of art. 2b, para. 5 of the ZRASRB and the specific for MU - Plovdiv

Table 1 presents the comparative indicators of Dr. Plamen Katsarov to the mandatory requirements for the competition for "ASSOCIATE PROFESSOR" in the field of higher education 7. "Health and Sport", by professional field 7.3. "Pharmacy" and scientific specialty "Technology of pharmaceutical forms with biopharmacy". The evaluation of the data shows that the candidate Dr. Katsarov meets the mandatory requirements and exceeds the quantitative criteria and scientific metrics and the indicators of MU-Plovdiv for "ASSOCIATE PROFESSOR".

TABLE 1.

Group of indicators	Indicator	Number of points required for JSC "Associate Professor"	Number of points for candidate Dr. Plamen Katsarov
A	Dissertation for awarding educational and scientific degree "Doctor"	50	50
B	Habilitation work - monograph	100	100
G	Indicators 5 – 9	210	247.67
D	Indicators 10-12	300	1920
Is	Indicators 13-22	50	205
F	Teaching activities	560	1119.5
	TOTAL	1270	3642.17

CONCLUSION

The documents, presented in the competition, and my personal opinion give me a reason to judge that Dr. Plamen Katsarov, DF is a well-respected lecturer and a valuable researcher in the field of "Technology of Dosage Forms with Bio pharmacy", with achievements for teaching, science and practice. This fully meets the criteria of the national law and corresponding regulations. Based on the positive assessment of the teaching activity and the high scientific significance of the scientific works, I strongly support granting of the academic position "ASSOCIATE PROFESSOR" to Dr. Plamen Dimitrov Katsarov, PhD.

Заличено на осно јание

Чл.5 §1, б. "В" Регламент (ЕО)2016/679

07. 06. 2023 г.
Sofia

.....
prof. Virginia Tzankova, PhD