

Presented by

**Assoc. Prof. Stanislav Radoslavov Gueorguiev, PhD in Pharmacy**  
**Department "Pharmaceutical Sciences", Medical University, Plovdiv**

Competition for the academic position of "Associate Professor" in the field of higher education in "Healthcare and sports", in the professional field „Pharmacy” Published in the State Gazette, issue 19/28.02.2023 in the scientific field “Technology of dosage forms and biopharmaceutics” for the "Pharmaceutical Sciences" department at the Faculty of Pharmacy of the Medical University of Plovdiv.

Only one candidate participating:

**Chief assistant professor Plamen Dimitrov Katsarov, PhD**

#### **General presentation of the candidate**

Born on September the 1<sup>st</sup> 1986 in Plovdiv.

He graduated from the Faculty of Pharmacy of the Medical University of Plovdiv in 2012 and immediately after that won a competition for an Assistant in the Department of Pharmaceutical Sciences at the Faculty of Pharmacy of the Medical University of Plovdiv.

In 2017, he defended his doctoral thesis on the topic "Polymer microspheres with doxylamine and pyridoxine for nasal administration" as a self-taught doctoral student.

In 2018, after winning a competition, he was appointed Chief Assistant in the “Technology of Pharmaceutical Forms and Biopharmacy” field at the department.

In 2018, he acquired a specialty in "Pharmaceutical Technology and Biopharmacy".

During 2013 – 2022 he completed many different trainings, including the Erasmus+ program.

During 2016 – 2022 he is an Academic advisor in the program “Student practices – phase 1” and “Student practices – phase 2” carried out by the Ministry of Education and Science at the MU-Plovdiv.

The candidate is also assigned the following administrative activities:

- Responsible for educational activities and distance learning in the department;
- Responsible for ensuring fire safety at the department;
- Responsible for the department's website.

Member of the Bulgarian Pharmaceutical Union.

Member of Youth Scientific Society "Asclepius".

#### **Scientific indicators**

1. A list and copies of 27 scientific publications and 21 participations in national and 4 participations in international university and scientific forums are presented.

2. There are 12 scientific publications with a total IF of 36,671. H index (Scopus): 7.

3. Participation in the following national projects:

- Project No. BG-RRP-2.004-0007-C01 "Strategic research and innovation program for the development of MU - Plovdiv (PSNIIR-MUP)"

- OMNIA project, No. BG05M2OP001-2.016-0007, procedure "Modernization of higher education institutions"

- Project No. BG05M2OP001-2.009-0025 "Doctoral Education at the MU - Plovdiv for - Competence, Creativity, Originality, Implementation and Academicism in Science and Technology - 2 (DOCTORAL CANDIDATE 2)"

- Project No. BG05M2OP001-2.013-0001 of the Ministry of Education and Science "Student practices - Phase 2"
- Project No. BG05M2OP001-2.002-0001 of the Ministry of Education and Science "Student practices - Phase 1".

1. Intra-university projects at MU-Plovdiv:

- No HO-13/2022 - "The role of biocomposite materials at the implant-soft tissue interface - modern strategies for the prevention of peri-implantitis"
- No ДПДП04/01.09.2021 - "Antimicrobial activity of canal filling agents for the treatment of endodontic infection of temporary teeth"
- No ДПДП-02/2019 - "Study of biological activities of polysaccharides from Bulgarian brown algae of the genus *Cystoseira*"
- No HO-12/2015 – "Microencapsulation of essential oils – a technological approach for their inclusion in solid dosage forms"
- No СДП-04/2015 – "Polymer microcarriers as an innovative drug-delivery system for nasal introduction of doxylamine and pyridoxine"

2. There is 1 co-authored monographic work on "POLYSACCHARIDE MICROCARRIERS FOR DRUG DELIVERY" - ISBN 978-619-189-217-4.

3. The total number of citations of the candidate's works is 223 citations, 128 of which are in Scopus.

**The volume of the presented scientific production meets the requirements for occupying the academic position "associate professor".**

**Evaluation of contributions**

The contributions have been innovative since the doctoral thesis development and are mainly in the field of:

- Preparation and characterization of polymeric microcarriers such as pharmaceutical delivery systems;
- Extraction of polysaccharides of natural origin and study of their biological activity;
- Development of spectrophotometric methods for quantitative determination of medicinal substances.

1. With the development of micro- and nanotechnologies in recent years, new opportunities for more effective pharmaceuticals delivery have been created. The use of polymeric drug carriers has emerged as a successful approach to create microparticles with controlled and/or targeted drug release. Such innovative strategies are used to improve the prevention and treatment of various diseases. Thanks to their biocompatibility, biotolerability and biodegradability, natural polysaccharides such as chitosan, alginate, gum arabic, maltodextrin, etc. are among the most preferred materials in the development of micro- and nano-drug delivery systems, offering relatively easy preparation of particles with desired characteristics

The candidate's studies in this thematic direction are aimed at the development and optimization of strategies to increase the efficiency of inclusion of medicinal substances in micro-sized polysaccharide carriers, with the aim of achieving modified drug release and targeted delivery (1.1. Polymeric microparticles with doxylamine and pyridoxine for nasal administration and 1.2. Polymeric microparticles with chlorhexidine for buccal application), as well as protection of the biologically active substances included in the particles and increasing their chemical stability (1.3. Microencapsulation of essential oils with natural polysaccharides). The main contributions in the scientific articles published on the subject can be summarized as innovative in fundamental and scientific-applied terms.

2. In recent decades, materials of natural origin have gained wide acceptance in almost all areas of human life. Due to their biodegradability, renewable and practically inexhaustible sources, as well as their relatively low cost, natural polysaccharides are widely used as

substitutes for synthetic polymers in a number of fields of pharmaceutical technology, including as drug carriers in the development of micro-sized drug delivery systems. Moreover, natural polysaccharides have been proven to have a wide range of pharmacological effects such as antitumor, immunomodulatory, antioxidant and anti-inflammatory activity.

The candidate's studies in this thematic direction are aimed at optimizing the methods for extracting polysaccharides of natural origin (2.1. Isolation and analysis of alginate from brown algae; 2.2. Isolation and analysis of 6 fucoidan from brown algae and 2.3. Isolation and analysis of polysaccharides from the genus *Plantago*) and studying their biological activities with the aim of their potential use separately as therapeutic molecules or as polymeric carriers in the production of drug delivery systems.

3. In recent years, the pharmaceutical market has seen an increase in the number of medicinal products containing combinations of several active substances in fixed doses (combined medicinal products with a fixed dose, FSDC). This necessitates the combination of analytical methods allowing the simultaneous determination of more than one medicinal substance included in the dosage form. The combination of UV-spectroscopy with appropriate chemometric techniques is a successful approach for the evaluation of pharmaceutical products that can be applied as an alternative to liquid chromatography. On the other hand, factors such as: overlapping of signals, lack of linearity or multiple co-linearity, presence of deviating values, etc., can limit the effectiveness of the technique.

The candidate's studies in this thematic direction are aimed at developing and validating spectrophotometric methods for the quantitative analysis of pharmaceutical substances, based on modern chemometric separation techniques such as: Partial least squares (PLS), Multivariate curve resolution-alternative least squares (MCR-ALS) и Net analyte signal-based method (NAS) (3.1. Determination of doxylamine and pyridoxine in combination; 3.2. Determination of paracetamol, propifenazone and caffeine in common mixtures and 3.3. Determination of enalapril maleate in different media).

The results of these studies are reflected in 15 scientific publications.

Contributions from the scientific publications and research are in the following areas: "Pharmaceutical technology and biopharmacy", "Development and characterization of micro- and nano-sized polymeric drug carriers as pharmaceutical delivery systems", "Modified release dosage forms", "Methods for extraction and analyzing natural polysaccharides", "Spectral methods for quantitative determination of medicinal substances in dosage forms."

The presented monographic work has clearly set goals, in detail and thoroughly examines the modern directions in the development of polymeric microparticles as drug-delivery systems and polysaccharides as carriers for this type of systems. The monograph presents the innovations related to this type of microparticles – microencapsulation of vitamins, probiotic bacterial strains, essential oils, peptides and therapeutic proteins. Data from in-house research on the development of chitosan microparticles incorporating chlorhexidine are presented. The advantages of starches, maltodextrin, cyclodextrins, cellulose derivatives, pectins, chitosan, sodium alginate and natural gums (xanthan gum, gellan gum, guar gum, etc.) are thoroughly discussed. The object of the own studies is the isolation and analysis of two polysaccharides, fucoidan and alginate, contained in Bulgarian brown algae of the species *Cystoseira crinita* (Desf.) Bory.

The teaching load of chief assistant Plamen Katsarov, PhD, exceeds the norm for non-habilitated lecturers – on average more than 940 hours with a norm of 360 hours per year. In recent years, he also gives lectures on Technology of dosage forms, Biopharmacy and Pharmacokinetics, as well as Pharmaceutical calculations.


The reading of the peer-reviewed works outlines chief assistant Plamen Katsarov, PhD as a specialist with serious scientific interests oriented in the field of "Pharmaceutical Technology and Biopharmacy."

### CONCLUSION

Based on what is stated in the standpoint and in accordance with the criteria of the "Development of Academic Staff in the Republic of Bulgaria Act" and the Regulations for the Organization and Activities of the MU-Plovdiv and the part Regulations for occupying the academic position "Associate Professor", I recommend that the members of the honorable Scientific jury choose the candidate Plamen Dimitrov Katsarov, PhD, as "Associate Professor".

29.05.2023

Prepared by:

  
~~Assoc. Prof. Stanislav Gueorgiev, PhD/~~  
Заличено на основание

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