

О P I N I O N
by Prof. Iliya Nikolov Iliev, PhD,
University of Plovdiv "Paisii Hilendarski"

Member of the scientific jury according to an order of the rector of University "Prof. Dr. Asen Zlatarov" № 266 / 15.09.2022

in Area of higher education: 4. Natural Sciences, Mathematics and Informatics
Professional Field: 4. 2 Chemical Sciences
Biochemistry
for the needs of The University "Prof. Dr. Asen Zlatarov"

In the competition for "associated professor", announced in State Gazette no. 45 from 17.06.2022 and on the website of The University "Prof. Asen Zlatarov", as the only candidate is A Chief Assistent. Dr. Yordan Nikolaev Georgiev from the Laboratory Biologically Active Substances – Plovdiv to Institute in organic chemistry with center of phytochemistry at the Bulgarian Academy of Sciences BAS).

1. General presentation of the procedure and the candidate

The set of materials (in electronic form) presented to me by Chief Assistent. Dr. Yordan Nikolaev Georgiev is in accordance with the Law on the Development of Academic Staff of The University "Prof. Asen Zlatarov" and includes all the necessary documents for participation in the competition.

The proposals submitted by The ace. Dr. Yordan Georgiev materials for participation in the competition for the academic position "Associate Professor" include according to indicator B4 6 scientific publications (5 of which with Q1 and one with Q2) and one theachnig book for practicum in biochemistry in connection with the announced competition, which were not used for the acquisition of the ONS "Doctor" and the academic position "Chief Assistant", as well as according to indicator D - 13 scientific publications, 7 with Q1, Q2: 3 with Q4: 3. All of them are the result of the scientific activity of the candidate during his/her professional career.

Chief Assistant Yordan Nikolaev Georgiev was born on December 10, 1988. Yordan Georgiev graduated from UHT-Plovdiv in 2011. specialty "Biotechnology". In the period 2011 – 2013 he graduated with an excellent master's degree in Biopharmaceutical Bio-Chemistry at Paisii Hilendarski University. In the period 2013-2016 he is a regular PhD student in LABORATORY "BIOLOGICALLY ACTIVE SUBSTANCES - PLOVDIV" at the Institute of Organic Chemistry with THE CENTER OF PHYTOCHEMISTRY OF BAS, and since 2016. appointed assistant to the same laboratory. During his training he successfully attended training courses in "Mass spectrometry and proteomics – methods and application" and on MRI spectroscopy at IOHSF-BAS; matlab computer program at the Training Center at bas. Dr. Georgiev specializes in various foreign

laboratories - Department of Experimental Bi-ology, Faculty of Natural Sciences, Masarikov University, Sofia, Bulgaria Brno, Czech Republic, Department of Pathophysiology of Free Radicals, Institute of Biophysics at the Academy of Sciences, Sofia, Bulgaria Brno, Czech Republic, Department of Pharmaceutical Hy-ia, Institute of Pharmacy, University of Oslo, Oslo, The Kingdom of Norway, prof. Haruki Yamada and Prof . Hiroaki Kiyohara in the Laboratory "Biopharmacology of Fi-Totherapists", Institute of Natural Sciences "Kitasato" at Kita-sutto University, Sofia, Bulgaria Tokyo, Japan. In 2018. successfully defended his dissertation and received a doctorate in science and specialty 01.05.10 "BIOORGANIC CHEMISTRY, CHEMISTRY OF NATURAL AND PHYSIOLOGICALLY ACTIVE SUBSTANCES". Already in the same year he was selected as chief assistant at LBAV – Plovdiv at IOHSF-BAS. In the period 2018 – 2021 go-dina is a head professor of biochemistry at the Department of Biochemistry of the Medical University of Plovdiv. From August 2022. has been appointed as a researcher at the Center for Com-Petency BG05M2OP001-1.002-0012 "Sustainable utilization of bio-resources and waste from healing and aromatic ras-tena for innovative bioactive products" under OP NOIR.

The information presented by the Georgiev scientific activities fully comply with the minimum national requirements for 4. 2. Chemical Sciences Sciences.

By Criterion A (min. 50 t.) – 50 points

There is an acquired ONS "Doctor" in scientific specialty 01.05.10 "BIOORGANIC CHEMISTRY, CHEMISTRY OF NATURE AND PHYSIOLOGICALLY ACTIVE VE-SES" in 2018. on the topic "STUDY OF THE STRUCTURE AND IMMUNOMODU-LYSIS POTENTIAL OF ACID HETEROPOLYSACCHARIDES OF PECIN TYPE IN BULGARIAN MEDICINAL PLANTS"

By criterion C (min. 100 t.) – 145 points

There are 6 articles that are referenced and indexed in world-famous databases of scientific information (Web of Science and Scopus) and are in categories Q1 - 5 pieces and Q2 – 1 pieces. They are not used to acquire the educational and scientific degree "Doctor", and to hold the academic position "Chief Assistant".

By criterion D (min. 200 t.) – 265 points

They include 13 publications in publications that are referenced and indexed in world-famous databases of scientific information (Web of Science and Scopus), which are in categories Q1 – 7 pieces, Q2 – 3 pieces, Q4 – 3 with total impact factor: 53.339. Publications do not include results of the candidate's dissertation.

By criterion E (min. 100 t.) – 468 points

Includes 234 citations in scientific publications, monographs, collective volumes and patents referenced and indexed in world-renowned databases of scientific information (Web of Science and Scopus).

Criterion E (min. 100 t.) – 230 points

Dr. Georgiev has participated in the research program of 13 projects: youth: 2 pcs.; national: 8 pcs.; international: 3 pcs. He is the head of the teams of two international projects and is the head of two national projects. He is the author of a teaching aid in biochemistry for medical students. Chief

Assistant Georgiev exceeds significantly the minimum requirements by collecting a total number of points 1158.

2. General characteristics of the applicant's activities

Chief Assistant Yordan Georgiev actively participates and shares his knowledge and skills both in conducting the research in the laboratory, to which ra-bots, as well as in the training in biochemistry of medical students at Medical University – Plovdiv.

Scientific and scientific-applied results

The main scientific interests of the candidate are in the field of two of the traditional scientific fields at BAS – "Biomedicine and Quality of Life" and "Nanosciences, New Materials and Technologies". The main scientific objectives of the applicant are related to the search for polysaccharides with immunomodulatory properties and metabolites with antioxidant properties in Bulgarian medicinal plants, cyanobacteria, Antarctic yeast and traditional agricultural crops in order to develop new functional products with biomedical application. The main scientific problems on which the applicant is working are concentrated on clarifying the immunomodulatory mechanisms of natural polysaccharides and the relationship between their structure and their biological activity. In applied aspect, his research is on the development of new functional foods enriched with native antioxidants that would find their place in modern biomedicine. The two themes cover a serious interdisciplinary perimeter of research when combining scientific fields such as: phytochemistry, nutritional chemistry, pharmacognosy, immunology, medical biochemistry, enzymology, nutritional bio-technology and dietetics. Dr. Georgiev optimizes various methods for isolation, chromatographic purification and modification of polysaccharides and their subsequent hy-mystic characteristic by conducting NMR and mass spectral structural analyses. An essential part of his work is the development of in vitro and ex vivo biological analyses to evaluate the immunomodulatory activity of polysaccharides with human white blood cells. When examining polyphenols, it has modified various methods for their isolation, chemical characteristic and evaluation of their immunomodulatory and anti-oxidant activities. The candidate is a co-author of 33 scientific publications with a total im-pact factor of 102.177, which have been quoted over 250 times (including articles that are not referenced and indexed there) according to Scopus data. Scientific publications are grouped into two main directions according to the author:

I. Biologically active polysaccharides - Chemical characteristic and immuno-modulating action of polysaccharides and oligosaccharides, isolated from healing grows, edible fungi and microorganisms;

II. Phytochemical analysis and antioxidant action of extracts from forest fruits, vegetables and medicinal plants in order to develop new functional pro-dukes with biomedical application.

The scientific contributions the candidate has described extensively in the same two main nras. I accept the scientific and scientific and applied contributions made by Dr. Yordanov, which I would summarize as the most significant in the following way:

1. When the Mursal tea polysaccharide is tested, the resulting acid-extractable pectin polysaccharide is composed of uronic acids (72.4 mol%), mainly galacturonic, followed by galactose (14.5 mol%), glucose (6.2 mol%), xylose (2.8 mol%), Arabinose (2.5 mol%) and rhamnose (1.6 mol%). Pectin is a high molecular weight ($60-100 \times 10^3$ g/mol), with a very high content of highly methylesterified (71 mol%) homogalacturon. Acetyl esters (9 mol%) of galacturon components were found to contain only methylesterified residues in fragments with a high methanol content. The detailed study of homogalacturonan fragments of Mursal tea was carried out using the combination of enzymatic hydrolysis with pectin lyase and endopolygalacturonase, and subsequent analysis by LC-HILIC-MS, HPAEC and HPSEC techniques.

2. Of the in vitro culture of the medicinal plant *Fumaria officinalis* L. is isolated and characterized pectin polysaccharide with inflated foaming and emulsifying properties, in model systems with a concentration of 1 %, from those of leek pectin. The scientific contribution of this development is associated with the chemical characterization of acid polysaccharides in fumarium, which essentially turned out to be low-esterified pectins with good foaming activity.

3. When analyzing 63 samples of pepper from the Balkans, it was found that the varieties used to obtain pepper powder are characterized by the highest content of common phenols (incl. general flavonoids) and the best antioxidant activity. The phytochemical characteristic and analysis of the antioxidant activity of the wide variety of pepper varieties originating in the Balkans has been made. This research helps to preserve the genome of the different varieties of pepper in our region.

4. Based on the excellent co-pigment properties found of certain phenolic acids (rosemary, chlorogenic and syring) and catechins (catechin and epicatechin) to the anthocyanins of aronia fruits are selected lavender extracts and its distilled waste, *Filipendula ulmaria* L. and *Camellia sinensis* L., which are rich in these compounds. In essence, the scientific contribution relates to the development of natural antioxidant mixtures in order to food products to preserve their useful functional properties.

5. Aqueous extracts from jojoba presses have been found to exhibit in vivo hepatoprotective action against induced toxic effects with high doses of paracetamol in experienced male rats. Extracts help restore antioxidant protection of the liver in experimental animals, suppress inflammation and apoptosis (affects (Bax and Bcl-2).) of the affected cells. This has been associated with the normalisation of levels of a number of enzymes, such as AST, ALT, GGT and LDH, as well as an increase in the suppressed activity of antioxidant enzymes superoxide dismutase, catalase and levels of reduced glutathione.

Teaching activity

Chief Assistant Dr. Yordan Georgiev has successfully realized himself as a biochemistry professor, regardless of the very busy scientific program. School-weld of the Dr. Yordan Nikolaev Georgiev, at the Medical University of Plovdiv) has a total audience of 1428 teaching hours and is related to the following activities:

1. Conducting laboratory exercises and seminars in biochemistry of Bulgarian and international students from specialties Medicine, Dental Medicine and Pharmacy (Bulgarian students of this specialty only) for the academic year 2018/2019 – 535 lessons and 73 hours in exam boards.

2. Conducting laboratory exercises and seminars in biochemistry of Bulgarian and foreign students from specialties Medicine and Dental Medicine for the academic year 2019/2020 – 456 lessons.

3. Conducting laboratory exercises and seminars in biochemistry of Bulgarian and foreign students from specialties Medicine, Dental Medicine and Pharmacy for the academic year 2020/2021 – 437 training hours.

Dr. Georgiev is the author of a teaching aid in biochemistry for medical students:

Georgiev, J.N. Training aid in biochemistry for medical students – Up-rossnik for self-preparation for colloquiums, first edition. Reviewer: Prof. Dr. Krasimir Georgiev Vasilev, Publishing house Libra Scorp, Sofia, Bulgaria Burgas, Bulgaria, 2022, 140 p., ISBN 978- 954-471-877-0. <http://booksinprint.bg/Publication/Search?SearchCriteria=ISBN978-954-471-877-03AAnd&page=1>

Dr. Georgiev has led the development of the thesis of Gabriela Asenova Fuzlova (Bachelor's Degree), Department of Biotechnology of the University of Food Technologies (UHT) – Plovdiv. The theme of the development is "Study of the structure of water-extractable pectin polysaccharides in the leaves of the ancient Rhodope ende-myth *Haberlea rhodopensis* Friv. (Orphe flower)".

In his relatively short teaching work with students, Dr. Georgiev did not indicate whether he had developed or improved some of the practical classes he taught the students. The presented teaching aid personally, I would hardly take as a serious occupation of a teacher who has not generally taken the lecture course especially in such a fundamental discipline as biochemistry. This opinion is even more explicit, since the narrative is not even co-authored. Typically, such tests for conducting exams and seminars require a lot of teaching experience. I think it is far more useful for the author himself and for students to prepare new practical classes on the subject of his scientific profile, edited for the level of students, which I hope he will do in the future.

Personal impressions:

I have known Dr. Georgiev since he was a student – master in the master's program "Biopharmaceutical biochemistry" and I have witnessed his scientific and professional growth both during the development of the dissertation work and subsequently as a senior assistant in the LBAC of IOCHCF at BAS. Over the years, he has emerged as a scientist with in-depth knowledge and experience in the field of biochemical science by developing an interdisciplinary approach in his research. It is of particular importance to me that his professional experience in applied studies is of particular importance, which is very valuable for his future work in training his students and PhD students. I hope to continue and deepen

its research by re-giving its knowledge and skills to students. In his dealings with colleagues, he showed a lot of loyalty, which enabled him to fit well into different teams. His significant international experience of working with teams of foreign universities I hope will benefit him in working and in future international projects. These qualities, supported by scientific achievements in the field of biochemistry, only confirm my belief that he fully deserves to be elected associate professor of biochemistry at The University of Prof. Dr. Asen Zlatarov".

CONCLUSION

The documents and materials submitted by Dr. Yordan Nikolaev Georgiev, meet all requirements of the Law on development of the academic staff of Re-Audience Bulgaria and the specific additional requirements of the University "Prof. Dr. Asen Zlatarov"., with publications and scientific activities exceeding the national requirements for the academic position "Associate Professor". In the work of the candidate there are original scientific and applied contributions, which are semi-chile international recognition through their publication in journals and scientific collections issued by international academic publishing houses. On the basis of all this, I give my positive assessment and support without hesitation the candidacy of The Post." ace. Dr. Yordan Nikolaev Georgiev for the academic position "Associate Professor" in the field of higher education: 4. Natural sciences, mathematics and informatics, 4. 2. Chemical Sciences, professional department "Biochemistry" for the needs of Prof. Dr. Asen Zlatarov".

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Plovdiv

Opinion issued by:
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