

REVIEW

on a competition for the occupation of an academic position "Associate Professor" at the Medical University - Plovdiv, announced in SG no. 59 of 11.07.2023 for the needs of the "Pharmacognosy and Pharmaceutical Chemistry" department at the Faculty of Pharmacy at the MU - Plovdiv.

in

field of higher education: 7. Health and sports

professional direction: 7.3. Pharmacy

scientific specialty: Pharmacognosy and phytochemistry

by professor Alexander Borisov Zlatkov, DSci, Faculty of Pharmacy, MU – Sofia.

For participation in the announced competition for the academic position of "associate professor" in the scientific specialty "Pharmacognosy and Phytochemistry" announced for the needs of the Department of "Pharmacognosy and Pharmaceutical Chemistry" at the Faculty of Pharmacy at the MU - Plovdiv, two candidates submitted documents:

Ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D., ch. assistant in the Department of "Pharmacognosy and Pharmaceutical Chemistry" at the Faculty of Pharmacy at the MU - Plovdiv and

Ch. assistant Paolina Kancheva Lukova - Katsarova, Ph.D., ch. assistant in the Department of "Pharmacognosy and Pharmaceutical Chemistry" at the Faculty of Pharmacy at the MU - Plovdiv

I will present my opinion of the two candidates sequentially, in alphabetical order of their last names.

General description of the submitted materials for the competition.

Both candidates for participation in the competition for taking academic position "associate professor" in the scientific specialty Pharmacognosy and Phytochemistry for the needs of the "Pharmacognosy and Pharmaceutical Chemistry" department at the Faculty of Pharmacy at the MU - Plovdiv, announced in SG no. 59 of 11.07.2023 have submitted a set of documents corresponding in content and number to those specified as required in the Regulations for Academic Development of MU-Plovdiv.

Personal and professional data for applicants

The candidate ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. was born in 1984 in the city of Plovdiv. In 2006, she graduated from the Medical University of Plovdiv and obtained a professional bachelor's degree, and in 2012 she graduated from the Faculty of Pharmacy of the Medical University of Plovdiv with a master's degree in pharmacy. In 2018, she obtained the scientific and educational degree "doctor". She began her scientific and teaching career at the Faculty of Pharmacy at the MU - Plovdiv in 2012, gradually moving through the positions of

assistant and chief assistant. In the period 2012 - 2015, she simultaneously held the position of a researcher at the Laboratory of Biochemistry and Microbiology, sector of scientific research in the field of pharmaceutical sciences (phytochemistry and enzymology) at the Technology Center at the Plovdiv University "Paisiy Hilendarski". She has a specialty in "Medicinal plants and phytopharmaceutical products" since 2018. The candidate is currently the administrative manager of the "Pharmacognosy and Pharmaceutical Chemistry" department at the Faculty of Pharmacy at the MU - Plovdiv.

The candidate ch. assistant professor Paolina Kancheva Lukova - Katsarova, Ph.D. was born in 1987 in the city of Plovdiv, in 2012 she graduated from the Faculty of Pharmacy of the Medical University of Plovdiv with a master's degree in pharmacy. In 2018, she obtained the scientific and educational degree "doctor". She began her scientific and teaching career at the Faculty of Pharmacy at the MU - Plovdiv in 2012, gradually moving through the positions of assistant and chief assistant. She has a specialty in "Medicinal plants and phytopharmaceutical products" since 2018. The candidate is currently the chief administrative assistant of the "Pharmacognosy and Pharmaceutical Chemistry" department at the Faculty of Pharmacy at the MU - Plovdiv.

Educational - teaching work

Both candidates participating in the competition have submitted a detailed report on their educational and teaching activities, duly certified.

The candidate ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. declares the horary formed by classroom employment for the period from 2020/21 to 2022/23 (the last 3 academic years), according to the reference submitted by the applicant, as 4426 hours, of which 3400 hours are classes with students from the Master's degree and 217 hours of classes with students from the Professional Bachelor's College or an average classroom occupancy of 1,206 hours/year. Of the total classroom occupancy, there are 564 hours of lectures with students from the OKS "Master" and 82 hours with students from the OKS "Professional Bachelor". In addition to this classroom employment, the report also includes 210 hours of non-classroom employment (preparation of teaching materials, including electronic resources, consultations and administrative activities), as well as 590 hours of scientific work. Ch. assistant professor D. K.-B is also the author of two teaching aids in pharmacognosy - Notebook - pharmacognosy protocol for pharmacy students I and II part (co-authored with the other candidate in the competition - assistant professor P. L. - K and Assistant Professor D. Seimenska). Over the years ch. assistant professor D. K.-B was the academic supervisor of a student under the Erasmus+ program.

The catdidte ch. Assistant Professor Paolina Kancheva Lukova - Katsarova, Ph.D. has submitted documents from which it is evident that she has a timetable for classroom employment for the period from 2017/18 to 2019/20 (3 academic years) in the amount of 3393 hours, of which 2571 hours are classes with students from the Master's College and 155 hours of classes with students from the "Professional Bachelor" or an average classroom employment of 909 hours/year. Of the total classroom occupancy, lectures are 180 hours with students from the Master's College of Education and 30 hours with students from the Professional Bachelor's College. In addition to this classroom employment, the reference shows another 210 hours outside of classroom employment (preparation of teaching materials, including electronic resources, consultations and administrative activity - identical to the same indicator for the other candidate, head assistant D.K.-B), as well as

407 hours for scientific work. Ch. assistant P. L. - K is also the author of two teaching aids in pharmacognosy - Notebook - pharmacognosy protocol for students of pharmacy I and II part (co-authored with the other candidate in the competition - head assistant D. K.-B and Assistant Professor D. Seimenska).

I would like to point out that the study load report presented by the candidate ch. asst. P. L. - K is for the period 2017 - 2020, and not for the last 3 (three) academic years, as is the express requirement of Art. 108 of the Regulations for Academic Development at Medical University - Plovdiv. The candidate has submitted a certificate from the Human Resources Department for pregnancy, birth and child-rearing leave up to the age of two, as well as child-rearing leave up to the age of 8. According to Art. 163, para. 14 and Art. 164, paragraph 4 of the CT, these terms are recognized as work experience in the specialty, but I cannot agree with the candidate's request to recognize the study load from the period 2017-2020 as meeting the requirement of Art. 108 of the Regulations for Academic Development at the Medical University - Plovdiv and I do not accept the applicant's explanatory note, especially since there is a discrepancy between the described and the presented references.

Based on the above, I find that in terms of teaching and learning activities, both candidates are highly qualified teachers, but I believe that according to this indicator, the candidate ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. is better represented.

Scientific research work

In the competition, the candidate ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. participates with a total of 30 journal publications and 1 monographic work. Of the presented articles, 20 are in scientific publications referenced in international databases (Scopus and WoS) and 10 in non-refereed peer-reviewed journals. Of the indicated publications in refereed scientific periodicals, 16 are in IF journals. Publication No. 4 of those in publications referenced in Scopus/WoS I consider unrelated to the competition profile. I find the remaining 29 publications (19 in Scopus / WoS-refereed journals, 15 of which with IF and 10 in non-refereed periodicals) relevant to the profile of the current competition and accept them for review. I must point out that 14 articles (10 in refereed scientific publications and 4 in non-refereed) of those presented for participation in the competition are co-authored with the other candidate - Ch. Assistant Professor Paolina Kancheva Lukova - Katsarova, Ph.D. and I accept that in these publications the two candidates are equal. Thus, 15 journal publications remain for actual review - 9 in refereed scientific publications with IF and 6 in non-refereed journals.

The scientific research activity of the candidate ch. asst. D.K.-B is mainly concentrated in the field of pharmacognosy and phytochemistry and is reflected in the following areas:

1. Studies on the inhibitory effect of extracts from fruits of the species *Vaccinium myrtillus* L., common in Bulgaria, on the α -amylase enzyme (publ. 1r). The degree of inhibition of salivary α -amylase was determined as a factor for the prevention of metabolic syndrome and type 2 diabetes. A relationship was established between the amount of myricetin and the degree of inhibition of α -amylase activity, and that the phenolic compounds found in extracts of black blueberry, inhibit α -amylase and have the ability to act as antioxidants and free radical scavengers. A correlation

between the CUPRAC test and anthocyanin content was defined. The results of this study provide strong opportunities for developing the potential of *Vaccinium* extracts in suppressing postprandial hyperglycemia in diabetic patients and the development of new phytopharmaceutical products.

2. Histochemical studies and establishment of the chemical profile of essential oils. Essential oils from *Echinophora tenuifolia* subsp. *Sibthorpiana* (publ. 6r), *Rhaponticum carthamoides* (Willd.) (publ. 10r), *Tanacetum vulgare* L. , *Tanacetum parthenium* L. (publ. 2r and 3r), *Tanacetum macrophyllum* (Waldst. & Kit.) Schultz Bip (publ. 7r) and *Cardaria draba* (L.) (publ. 1n.r.), all originating in the Republic of Bulgaria, as well as essential oils from seeds of Bulgarian and Indian populations of *Trigonella foenum-graecum* L. The chemical profile of essential oils from Bulgarian population of the listed plant species, as well as of essential oils from seeds of Bulgarian and Indian populations of *Trigonella foenum-graecum* L. The research data could be used in the quality control of and serve to prevent adulteration with impurities of the plant raw material in question. For some of the oils, the mean lethal dose by intraperitoneal administration has been determined. The results of the conducted research can serve as a basis for the evaluation and subsequent study of other pharmacotherapeutic effects of the investigated essential oils. For the first time, the *in vivo* acute and subchronic toxicity of an essential oil obtained from aerial parts of the species *Tanacetum parthenium*, common in Bulgaria, was studied.

3. Studies on representatives of the genus *Plantago*. A thorough pharmacognostic analysis of the leaves of *Plantago media* was carried out, establishing the main diagnostic microscopic marks and a comparative pharmacognostic analysis of the leaves of 3 species of the genus *Plantago* (*Plantago major*, *Plantago lanceolata* and *Plantago media*) was made. Extraction and isolation of polysaccharides from the genus *Plantago* was performed and their biological activity was evaluated. Their antioxidant activity, as well as their enzymatic hydrolysates, has been proven by means of three tests – DPPH, CUPRAC and FRAP. The prebiotic activity of hydrolysates from the leaves of the genus *Plantago* was evaluated using three probiotic strains of *L. plantarum* (*L. plantarum* S26, *L. plantarum* S27, *L. plantarum* S30).

Part of the research of ch. Asst. D. K.-B are associated with studies related to the biological activity of adaptogens of plant origin. One of the largest and most comprehensive meta-analyses of peer-reviewed evidence related to the effects of plant-based adaptogens has been conducted. As a result, systematized information on the benefits of plant adaptogens is provided and future directions for plant adaptogen research are outlined. The extreme seriousness of the potential in the development and registration of medicinal products containing plant adaptogens for the treatment of a number of significant diseases has been specified.

In the competition for the occupation of the administrative position "associate professor" candidate ch. ace D. K.-B participated with a monographic work on the topic "HPTLC - application and possibilities in the analysis of substances of plant origin". The presented monograph is a significant and up-to-date work dedicated to the improved possibilities in the analysis of biologically active substances, mainly of plant origin, using chromatographic techniques, which are an indispensable part of the qualitative and quantitative analysis, control of medicinal products and nutritional supplements, as well as in doping control, the analysis of pesticides, aflatoxins, primary and secondary plant metabolites. The monograph is structurally divided into six chapters. The first part describes the fundamental advantages of HPTLC and separation techniques. In the second part,

considerable attention is paid to the main modules and stages of the chromatographic process. Applicators, semi-automatic and automatic modules, derivatization processes and development and detection techniques are discussed in detail, as well as an overview of the software used. In the third part of the study, the chromatographic plates and phases in HPTLC are described. The types of plaques, their advantages and disadvantages, as well as the different areas of application are discussed in detail. The fourth chapter of the monographic work deals with the subject of validation of HPTLC methods. The main characteristics are described in detail, according to internationally recognized standards, such as linearity, accuracy, precision, detection limits, sensitivity, etc. The fifth separate chapter of the monograph is aimed at practice – a significant number of examples from the analysis of secondary metabolites of plant origin are correctly presented and interpreted. An excellent impression is made by the commentary on extracts with different composition, BAS groups, as well as the application of the method in the standardization of a large number of phytoproducts, in the light of the requirements of the European Pharmacopoeia 10.0 operating in our country. The last part of the monograph examines the prospects for the method and the possibilities for combining the advantages of HPTLC with other chromatographic techniques - mainly HPLC, as well as the combination between HPTLC and other instrumental methods such as: mass spectrometry (HPTLCMS), HPTLC - infrared spectroscopy (HPTLC-IR) and etc. Based on what has been said, I believe that the monographic work can also be considered as a practical guide to HPTLC and will be useful to all those who wish to familiarize themselves in detail with the foundation and new achievements of chromatography in the analysis of substances of plant origin.

Ch. Assistant Professor Paolina Kancheva Lukova - Katsarova, Ph.D. submitted for participation in the competition a total of 31 journal publications, 3 chapters of collective monographs referenced in Scopus and 1 monographic work. Of the mentioned articles, 18 were published in international scientific journals referenced in international databases (Scopus and WoS) and 13 – in non-refereed journals with scientific review. Of the referred publications in refereed scientific periodicals, all 18 are in IF journals. Publications No. 2, 3, 5, 6, 7, 8 and 13 of the scientific publications referenced in Scopus/WoS are related to the scientific specialty Drug Technology and do not meet the competition profile. The same applies to publications No. 2, 3 and 4 of those published in non-refereed literary sources. I exclude the listed 10 posts from review as unrelated to the contest profile. Also in publication #1 of the references I did not find a phytochemical part, so it can largely be considered in the above 10, especially since the plant material of this article was the subject of research published in another article. The remaining total of 20 articles (10 refereed and 10 not refereed) I find related to the competition profile and accept for review. It should be noted that 9 articles (6 in refereed scientific publications and 3 in non-refereed) of those presented for participation in the competition are co-authored with the other candidate - chap. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. and I accept that in these publications the two candidates are equal. Thus, 11 journal publications remain for actual review - 4 in refereed scientific publications with IF and 7 in non-refereed journals

The main contributions in the presented publications and scientific works can be summarized in the following thematic directions:

1. Isolation, structural characterization and enzymatic modification of polysaccharides from seaweeds and higher plants. The candidate's studies in this thematic area are aimed at optimizing methods for the extraction and structural characterization of polysaccharides of natural origin

Regarding the participation in national scientific and educational projects of female candidates, the following can be reported: Chief assistant D. K.-B. has taken part in a total of 12 projects (10 national scientific projects, 2 of which under the Scientific Research Fund and in 2 educational projects with European funding), with 5 of the projects being implemented in the last 3 years. Ch. assistant P. L.-K. is a member of the research teams of a total of 7 (4 national scientific projects, 1 of which under SRF and in 3 educational projects with European funding), all of which were realized before the candidate's prolonged absence from the department.

From the data presented above, it can be seen that in terms of scientific and research activity, both participants in the competition have very serious achievements. However, I believe that the scientific developments of Ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. are included almost entirely in the subject of the scientific specialty "Pharmacognosy and Phytochemistry", which gives me reason to accept ch. assistant D. K.-B. as better represented.

Citations of candidates' works by other authors

The candidate ch. assistant D. K.-B. has presented her own report on the citation of her published scientific works, including citations in refereed and non-refereed scientific journals corresponding to a point equivalent of 1760 items. The candidate's *h*-Index is 6 according to Scopus and 5 according to WoS.

The own citation reference presented by Ch. assistant P. L.-K. includes citations in refereed and non-refereed scientific journals corresponding to a point equivalent of 3785 items. It should be noted that 22 citations corresponding to 330 items and formed by two scientific articles refer to the scientific specialty "Drug Technology". One article - a pharmacological review related to the immunomodulatory and anti-inflammatory activity of fucoidan was cited 101 times according to the presented reference, and in a total of 18 articles from the presented in the citation reference the two candidates are co-authors. The *h*- index of the candidate ch. assistant P. L.-K. is 7 in Scopus and 6 in WoS.

According to this indicator, I believe that Ch. Assistant Professor Paolina Kancheva Lukova - Katsarova, Ph.D. is better represented, regardless of the fact that some of the cited articles refer to another scientific specialty, and in another group of cited articles the two candidates are co-authors, which makes them equal.

General conclusion and ranking of candidates

In the announced competition for "Associate Professor" in "Pharmacognosy and Phytochemistry", two candidates who are established scientists and teachers participate. The scientometric indicators characterizing their previous research activity satisfy the requirements set for candidates for the above-mentioned academic position.

According to the criterion "Reflection (citation) of the candidate's publications in the national and foreign literature (publication image)" the candidate ch. Assistant Professor Paolina Kancheva Lukova - Katsarova, Ph.D. has a quantitative superiority, which I assume is due to the high citability of a qualitative pharmacology review, to which the candidate's higher *h*-index value corresponds.

On the other hand, the scientific developments of Ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. are included to a much greater extent in the subjects of the scientific specialty "Pharmacognosy and Phytochemistry". She also has a significant advantage in terms of teaching, which gives me reason to assume that she is better represented overall.

On the basis of what has been said so far about the assets in the teaching and research work of the participants in the competition for the academic position "associate professor" in the scientific specialty "Pharmacognosy and Phytochemistry", I rank the candidates in the following order:

1. ch. asst. Diana Petrova Karcheva-Bahchevanska, Ph.D.
2. ch. asst. Paolina Kancheva Lukova - Katsarova, Ph.D.

I propose to the respected Scientific Jury to vote on a proposal to the Faculty Council of the Faculty of Pharmacy at the Medical University - Plovdiv, ch. assistant Diana Petrova Karcheva-Bahchevanska, Ph.D. to be elected to the academic position of "associate professor".

Sofia.

18.12.2023

Signed:

Застъпено на основание
№ 5 91, 6 "В" Преправен (ЕС)2016/679

(prof. Al. Zlatkov, DSci)