

R E V I E W

by Prof. Margarita Ivanova Kassarova - Traykova, PhD

Member of the scientific jury, appointed by Order No. R – 2155 /28.04.2025 of MU-Plovdiv in implementation of Art. 4 (2) and Art. 29a of the ZRASB and Art. 2, Art. 61 of the Regulations for the implementation of the ZRASB, in connection with a procedure for occupying one academic position "PROFESSOR", in Pharmacognosy and Phytochemistry, field of higher education 7. Health and Sports, professional field 7.3. Pharmacy at the Department of "Pharmacognosy and Pharmaceutical Chemistry" for teaching in Bulgarian on a part-time basis (4 hours) in the discipline "Pharmacognosy and Phytochemistry" according to an announced competition in the State Gazette, issue 15 of 21.02.2025 and upon an approved proposal of the Faculty of Pharmacy - MU-Plovdiv with protocol No. 4 of 23.04.2025 to hold a competition for the position of "PROFESSOR" with candidate Assoc. Prof. Niko Bambasat, Ph.D.

The submitted documents in connection with the competition are complete and in accordance with the requirements of the Law on Academic Staff Development of the Republic of Bulgaria and the Regulations for the Implementation of the Law on the Development of Academic Staff, the Regulations for Academic Development at the Medical University of Plovdiv and allow for a complete and objective assessment of the candidate participating in the competition. The only candidate in the competition is Assoc. Prof. Niko Yosif Bambasat, Ph.D.

Analysis of the candidate's career profile

Assoc. Prof. Niko Bambasat, Ph.D. graduated as a Master of Pharmacy at the Faculty of Pharmacy, Medical University - Sofia in 1988. He started working as a Technologist - manufacturer of dosage forms at the Pharmaceutical Company "Stanke Dimitrov" in the town of Stanke Dimitrov. Since 1989 he has been a full-time doctoral student at the Faculty of Pharmacy - Medical University - Sofia. He defended his doctoral dissertation and in 1994 he was awarded the ONS "Doctor" (Candidate of Pharmaceutical Sciences) with his dissertation "Phytochemical study of taxa of the genus *Astragalus* L. distributed in our country." He was successively appointed as an assistant, senior assistant and chief assistant at the Faculty of Pharmacy, MU-Sofia. In 2000, he acquired a specialty in the SDO "Medicinal Plants and Herbalism", and in 2008 he successfully completed a second specialty in the SDO - "Analysis of Medicinal Products". Since 2013, he has held the academic position of Associate Professor in the scientific specialty "Pharmacognosy and Phytochemistry" at the Department of Pharmacognosy and Botany, Faculty of Pharmacy - Sofia. Since 2019, he has been appointed as an "Associate Professor" at the Faculty of Pharmacy of the Medical University of Plovdiv, Department of Pharmacognosy and Phytochemistry.

Description of the submitted materials for the competition

The candidate has submitted all documents required by the Law on Academic Degrees and Academic Positions of the Bulgarian Medical University, the Law on Academic Degrees and Academic Positions of the Bulgarian Medical University and the Regulations on the Terms and Procedures for Acquiring Scientific Degrees and Holding Academic Positions at the Medical University - Plovdiv: CV, certified diplomas for education and for two specialties in the Medical University of Plovdiv, a diploma for the National Board of Education "Doctor", certificate of internship in the specialty, official report on the study load, list of scientific works and full texts of publications, report on citations, summaries of scientific works in Bulgarian and English, author's monographic work and reviews to it, two chapters of collective monographs with international author team, author's reference for original scientific contributions, list of participation in national and international scientific forums, reference - self-assessment according to a template, list of projects in which he/she has participated, reference for educational activities, current reference for Hirsh Index and others.

Evaluation of the candidate's scientific works for the overall academic development

Assoc. Prof. Niko Bambasat participated in the competition with 27 publications referenced and indexed in Scopus and Web of Science and 4 in non-refereed periodicals (all after the associate professor). Of the indexed publications, 23 are with IF, with a total IF over 60. His scientific works have been cited many times. For the period 2022 - 2025 alone, 128 citations were identified according to Scopus data. According to Scopus data, his H-index is 11 (excluding self-citations). His scientific results have been presented at 11 scientific forums. He has participated in the research teams of 6 intra-university scientific projects funded by MU-Plovdiv, three of which he was the leader. He has presented one author's monographic work and two chapters of collective monographs.

Assoc. Prof. Niko Bambasat is the supervisor of two postgraduate students from the postgraduate training for acquiring a specialty of persons with professional qualification Master of Pharmacy studying at the Faculty of Pharmacy of MU-Plovdiv - specialty "Medicinal Plants and Phytopharmaceutical Products". He is the scientific supervisor of three doctoral students in the doctoral program "Pharmacognosy and Phytochemistry", two of whom have successfully defended their dissertations.

The applicant has attached a list of an impressive 32 products developed by him – food supplements for the period from 2014 to 2023, in various dosage forms. The majority of them include standardized extracts of herbal drugs or other natural products.

A summarized comparative table for the implementation of the minimum national requirements and their implementation according to the Regulations on the conditions and procedure for acquiring scientific degrees and occupying academic positions at the Medical University - Plovdiv for the professional field 7.3. Pharmacy is correctly presented.

Contributions from the developments of Assoc. Prof. Niko Bambasat

1. Contributions of a scientific nature:

- For the first time, the chemical composition of the essential oils from a Bulgarian population of the genus *Tanacetum* - *Tanacetum vulgare* L. and *Tanacetum parthenium* L. has been determined, and their unique phytochemical composition has been established. It has been established that the essential oil is of the camphor chemotype,

and the biologically active monoterpenes have significance as phytotherapeutic agents. The antioxidant activity of the oil was determined by the oxygen radical absorbance capacity (ORAC) method - $605.4 \pm 49.3 \mu\text{mol TE/mL}$. For the first time, an in vivo study was conducted on acute and subchronic toxicity of the extracted oil on Wistar rats and it was found that it was not toxic when administered orally. The median lethal dose for intraperitoneal administration ($\text{LD}_{50} \text{ i.p.} = 14.9 \text{ g/kg body weight}$) was determined. For the first time, the acute and subchronic toxicity of an essential oil obtained from the aerial parts of the species *Tanacetum parthenium*, distributed in Bulgaria, was studied in vivo. These results are a good prerequisite for creating products with medical purposes.

- The largest systematic analysis worldwide has been conducted to assess the benefits of plant-based diets for weight loss.

2. Contributions of a scientific and applied nature

- A histochemical analysis of *Rhaponticum carthamoides* (Willd) cultivated in Bulgaria was conducted. The exact localization of the essential oil contained in the plant species was established. For the first time, the chemical profile of the isolated essential oil from the cultivated species in Bulgaria was described. The obtained data could serve for quality control of plant material.
- A comparative study of essential oils from Bulgarian and Indian fenugreek seeds – *Trigonella foenum-graecum* – was conducted for the first time and the reasons for the differences in the composition of the essential oils – geographical, climatic conditions, agronomic factors – were defined. The results are of particular importance due to their applicability in standardization of the oil as an industrial product.
- A high-performance thin-layer chromatography (HPTLC) method for the qualitative and quantitative determination of galactose and mannose has been developed and validated. An HPTLC method for the analysis of galactose and mannose from hydrolyzed galactomannan isolated from Bulgarian fenugreek seeds has also been validated.
- The first-of-its-kind comparative study of black cumin oil, curcumin, and hydroxytyrosol on the effects of an experimental model of colitis in mice was conducted. Histologically confirmed improvements and restoration of mucosal structure, reduction of ulcerations and infiltration typical of ulcerative colitis were found.
- A first histochemical study of the secretory structures of the leaves and stem of *Crithmum maritimum* was conducted. It was found that the essential oil is localized in secretory canals of the parenchymal tissue of the leaves and stems. The essential oil contains 18 compounds with the dominant component dillapiol. A comparative study of essential oils from different geographical regions - Italy, Greece, Tunisia, Portugal - was conducted. The essential oil from Bulgaria has the highest dillapiol content.
- For the first time, an integrated study of the biological activity of *Sambucus nigra L* and *Sambucus ebulus L*. was conducted. Phytochemical analysis (HPLC) was performed, antioxidant activity and antiviral activity (HSV-2) were studied in vitro. The biological activity in these species is due to phenolic compounds. It has been found that *Sambucus nigra* fruit extracts have high anti-inflammatory and analgesic activity, comparable to that of diclofenac. High antiviral activity of *Sambucus nigra* fruit extracts has been found - over 98% viral inactivation in HSV-2. The research conducted and the results obtained have the potential for the development of phytotherapeutic preparations.

- The chemical profile of the essential oil of *T. macrophyllum* (Waldst. & Kit) Schultz Bip originating from Bulgaria was determined. 39 lipophilic components were identified, and the isolated essential oil was rich in oxygenated monoterpenes.
- A histochemical study of *Echinophora tenuifolia* subsp. *Sibthorpiana* was performed. For the first time, the chemical profile of an essential oil from a Bulgarian population was investigated by GC-MS analysis. Sixteen volatile components were identified, representing 92.03% of the total amount of essential oil. The results could be the basis for more in-depth future studies on the species *E. tenuifolia* subsp. *sibthorpiana*, distributed in Bulgaria.
- The high quality of Bulgarian lavender oil has been proven. Samples from Bulgaria comply with ISO and the European Pharmacopoeia, with some of the indicators exceeding the quantitative requirements for certain compounds. A significant influence of genetic and environmental factors on the composition of essential oils and the need for selection of resistant varieties have been established.
- A synergistic effect of nanoencapsulated oregano essential oil and gentamicin in gel form on antibacterial activity against *Staphylococcus aureus* has been demonstrated. Due to the additive effect of the nanoencapsulated oil with ciprofloxacin, a reduction in the dose of the antibiotic is possible.

Evaluation of the monographic work

The candidate has presented an author's monographic work on the topic "Essential oils - sources, preparation, analysis and application". ISBN 978-619-217-152-9, Publisher: Phaeton. The monographic work is written on 113 pages, illustrated with many figures and tables and extremely good graphic design. It is structured in three thematic chapters:

- Early historical notes on essential oil research. Preparation of essential oils on an industrial scale. Chromatographic techniques for separation and identification of essential oil components.

- Essential oil plants - general characteristics. Secretory structures of essential oils. Systematics and phytochemical variability of essential oil plants. Chemotaxonomy and chemotaxonomic markers.

- Проучвания върху българските етеричномаслени растения. Етеричномаслени растения с икономическо значение. Източници на етерични масла. Диво събиране и култивиране. Фактори, които влияят на производството и качеството на растенията за етерични масла.

Since ancient times, essential oils have been of great importance to human health due to their therapeutic properties. They are now widely used in industry, including the pharmaceutical industry. At the same time, research continues into their chemical composition, environmental factors on their chemical properties, their pharmacological action and especially their potential antimicrobial activity. Recently, a branch of clinical aromatherapy has emerged. With their antimicrobial properties, they would have an important role in the fight against microbial resistance, due to their complex composition and the difficulty of adaptive evolution of bacteria. Additionally, many essential oils are considered a good alternative to synthetic preservatives and pesticides.

In conclusion: the monographic work "Essential Oils - Sources, Preparation, Analysis and Application" is structured and illustrated extremely well, it contains comprehensive information about essential oils - the sources and methods of their preparation, including the technique for industrial production, methods of analysis and identification. Extensive attention is also paid to Bulgarian essential oil plants, their collection from wild sources or cultivation. The information is supplemented with results from our own research on essential oil plants in Bulgaria. The monographic work is written in good professional language and its informativeness could be useful for a wide range of researchers, students and doctoral candidates and specialists. Undoubtedly, this work reflects the broad awareness, extensive research and teaching experience of the author.

Study-methodical and teaching activity

Assoc. Prof. Niko Bambasat leads lecture courses in Pharmacognosy for students of pharmacy, master's degree and for students at the Medical College - Plovdiv, majoring in pharmacy, Assistant Pharmacist. The academic report presented for the study load over the last three academic years shows that the total classroom workload many times exceeds the regulatory requirements for the academic position held - in the 2023/2024 academic year it is 1445 hours (classroom workload and scientific activity). Assoc. Prof. Niko Bambasat is the supervisor of two postgraduate students from the postgraduate training course for acquiring a specialty of people with professional qualification Master of Pharmacy studying at the Faculty of Pharmacy of MU-Plovdiv - specialty "Medicinal Plants and Phytopharmaceutical Products". He is the scientific supervisor of three doctoral students in the doctoral program "Pharmacognosy and Phytochemistry", two of whom have successfully defended their dissertations. He has participated in the publication of four textbooks: A Guide to Practical Exercises in Pharmacognosy for Pharmacy Students. Popular medicinal plants and herbal recipes applicable to some diseases of the urinary system; Plants and drugs: Toxicity and safety; Guide for Practicals in Pharmacognosy for Pharmacy Students.

Participation in authoritative professional organizations, editorial boards, reviews, etc.

Assoc. Prof. Bambasat is a member of a few authoritative scientific and professional organizations: Member of the Bulgarian Scientific Society of Pharmacy, Member of the Bulgarian Association of Pharmaceutical Technologies, Member of the Bulgarian Botanical Society, Member of the American Botanical Society, Bulgarian Phytochemical Society, Member of the Bulgarian Pharmaceutical Union.

Critical notes and recommendations

I have no critical remarks. I would like to share my personal impressions of the candidate in this competition. I have known Niko Bambasat since he was a student and PhD candidate at the Faculty of Pharmacy in Sofia. It is not surprising that he chose to develop in the field of Pharmacognosy and Phytochemistry, given the parental example in the family - his father, long-time lecturer in pharmacognosy. Thanks to his many years of experience as a lecturer and exceptional energy and communicativeness, he was able to support the development of pharmacognosy teaching at the Faculty of Pharmacy - Plovdiv, for the development of the department and the development of doctoral dissertations under his supervision.

Assoc. Prof. Niko Bambasat is the embodiment of the application of scientific knowledge, his own scientific experience in real products developed by him, which are still being produced

at the present time. This is an extremely valuable quality, and I hope that he will have followers in this regard.

CONCLUSION

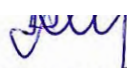
Considering the criteria of the Act on the Development of Academic Staff in the Republic of Bulgaria, the Regulations for its implementation, the Minimum requirements under Art. 2b, para. 2 and 3, the Regulations for Academic Development at the Medical University - Plovdiv, Section IV and the Mandatory Minimum Scientometric Indicators for the field 7.3. Pharmacy, I believe that there is full compliance with the requirements and the documents and evidence submitted for the competition by Assoc. Prof. Niko Yosef Bambasat: He has obtained the PhD "doctor" in the same specialty of the announced competition; he has 2 specialties under the SDO "Medicinal Plants and Herbalism" and "Analysis of Medicinal Products"; has presented an author's monographic work "Essential Oils - Sources, Preparation, Analysis and Application"; has extensive teaching experience of more than 33 years, having held the academic position of associate professor for 12 years (for 6 years at MU-Plovdiv); has full compliance with the minimum quantitative scientometric indicators and repeatedly exceeding some of them.

Comparative table of indicator values according to the requirements of MU-Plovdiv and the candidate Assoc. Prof. Niko Yosif Bambasat, Ph.D.

A group of indicators	Mandatory minimum scientometric indicators of MU-Plovdiv for direction 7.3. Pharmacy for AD "Professor"	Assoc. Niko Yosif Bambasat
A	50	50
V	100	100
G	300	322,74
D	500	1920
E	150	401,66
J	560	1014
Total: A - J	1660	3808,4

Therefore, I firmly state my positive opinion towards the candidacy of Assoc. Prof. Niko Bambasat, PhD in the current competition. He is a well-established researcher with broad scientific interests, a well-established and valuable lecturer in the specialty, has the necessary teaching experience and high scientific and applied achievements and fully meets the requirements for occupying the academic position of "PROFESSOR" in the specialty "Pharmacognosy and Phytochemistry" for the needs of teaching in the Department of "Pharmacognosy and Pharmaceutical Chemistry" and I strongly recommend that the members of the esteemed Scientific Jury make a positive decision for Assoc. Prof. Niko Yosif Bambasat to occupy the academic position of "PROFESSOR".

01.06.2025

Reviewer: 
Prof. Margarita Kassarova - Traykova

Заличено на основание
Чл.5 §1, б. "В" Регламент (ЕС)2016/679