

REVIEW

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Subject: Competition (announced in the State Gazette issue 07/23.01.2024)
for the academic position of "Associate Professor" in the field of higher education
7. "Health and Sports", professional direction 7.1. "Medicine", specialty "Pharmacology
(including pharmacokinetics and chemotherapy)",
for the needs of Department of Pharmacology and Clinical Pharmacology and
Therapeutics,
at Faculty of Medicine at Medical University – Varna

General presentation of the procedure

By order of the Rector of MU – Varna P-109-99/22.03.2024, I was elected a member of the Scientific Jury, and by decision of the meeting of the Scientific Jury (protocol №1 from 04.04.2024) I was elected to prepare a review on the procedure for acquiring the academic position "Associate professor" in the field of higher education 7. "Health and Sports", professional direction 7.1. "Medicine", specialty "Pharmacology (including pharmacokinetics and chemotherapy)", for the needs of Department of Pharmacology and Clinical Pharmacology and Therapeutics, at Faculty of Medicine at Medical University – Varna.

In the current competition, the only candidate is chief assistant professor Antoaneta Borisova Georgieva, MD, PhD.

Biographical data about the candidate

Chief assistant professor Antoaneta Borisova Georgieva, MD, PhD, was born on 30.07.1985 in Ruse. In 2010, she graduated with a master's degree in medicine. The positions held by Dr. Antoineta Georgieva in the Department of Pharmacology and Clinical Pharmacology and Therapeutics are: from 2012 to 2017 – assistant professor, since 2017 until now – chief assistant professor. Her total experience as a teacher is over 12 years which fulfills the requirement of Art. 125, item 3 of the Regulations for the development of the academic staff at Medical University – Varna, according to which the candidates

must have held the academic positions "assistant professor", "chief assistant professor" or elective non-academic position in MU-Varna not less than 5 years.

She has a specialty "Pharmacology" (2021), which meets the requirements of Art. 125, item 6 of the Regulations for the development of the academic staff at Medical University – Varna.

Over the years of her teaching activity, Dr. Antoaneta Georgieva persistently and responsibly developed herself as a teacher and scientist. From 2015 to 2016, she was a doctoral student of independent training at Department of Pharmacology and Clinical Pharmacology and Therapeutics. Since 2016, she is a "Doctor" in the doctoral program "Pharmacology (incl. pharmacokinetics and chemotherapy)" after successfully defending a dissertation on the topic: "Psychopharmacological effects of phenolic acids in experimental pharmacological studies" with scientific supervisor Prof. Stefka Valcheva-Kuzmanova, MD, PhD, DSc. With the dissertation she fulfills the requirement under Art. 125, item 1 of the Regulations for the development of the academic staff at Medical University – Varna.

Dr. Antoineta Georgieva speaks English and Russian.

She has 1 monograph, has participated in the writing of 4 teaching manuals, has 34 publications, 44 participations in scientific forums and is in the team of 5 research projects, 2 of which are funded by the Scientific Research Fund, Ministry of Education and Science and 3 – by the "Science" Fund of MU-Varna.

General description of the submitted materials for the competition

The documents provided for the competition are in accordance with the Act on Development of the Academic Staff in the Republic of Bulgaria, the Regulations for the implementation of the Academic Staff Development Act and the Regulations for the development of the academic staff at Medical University – Varna.

Evaluation of the candidate's scientific works

According to the presented academic report issued by MU-Varna, in the current competition Dr. Antoaneta Borisova Georgieva fulfills the minimum scientometric requirements for the academic position "Associate professor" specified in Appendix 1 of the Regulations for the development of the academic staff at Medical University – Varna.

She participates in the competition with:

1. Dissertation for the acquisition of the educational and scientific degree "Doctor" on the topic "Psychopharmacological effects of phenolic acids in experimental pharmacological studies" (indicator A1), which brings her **50** points;
2. Habilitation thesis – monograph on the topic "Traditional Bulgarian spices devesil, savory, fenugreek/chimen – potential health benefits based on the content of polyphenols" (indicator C3), which brings her **100** points;
3. Publications and reports published in scientific journals, referenced and indexed in world-renowned databases with scientific information (indicator D7) – 16 in number, carrying **129.6** points (with a requirement for a minimum of 80 points) + Publications in non-refereed journals (indicator D8) – 15 in number, carrying 72.5 points. From all these publications (group D indicators) the points are a total of **202.1** with a mandatory minimum of 200 points.
4. Full-text publications in scientific journals and collections, beyond the minimum scientometric requirements for occupying the academic position "Associate professor" – 3 publications, of which 2 are in non-refereed journals and 1 is in a collection, which carry **12.48** points.

In addition, 8 publications are included in the submitted academic report from MU-Varna with which Dr. Antoaneta Georgieva participated in the competition for the position of chief assistant professor, as well as 5 other publications related to the dissertation.

The presented academic report shows the high publication activity, as many of the results from the scientific research of the teams in which Dr. Antoaneta Georgieva has participated have found good reception in journals, refereed and indexed in Scopus and/or Web of Science.

Dr. Antoaneta Borisova Georgieva's scientific research is very diverse and includes a large number of experimental studies of the organoprotective and psychopharmacological effects of various pharmacological agents of natural origin.

In the documents submitted for review, the scientific contributions are grouped into 4 main directions.

The first direction is: **Elucidation of the pharmacological effects of various plants and of isolated polyphenols (flavonoids and phenolic acids) in experimental models of diseases and conditions.** In this direction, experimental studies were carried out with fustin isolated from Eurasian smoketree wood, Aronia melanocarpa fruit juice and chlorogenic acid. These results were published in 17 full-text articles.

Fustin has demonstrated the following effects: anti-inflammatory effect in carrageenan-induced paw edema, gastroprotective effect in indomethacin-induced ulcerogenesis model,

beneficial effect in colitis induced by rectal administration of trinitrobenzene sulfonic acid and hepatoprotective effect in paracetamol-induced hepatotoxicity model.

In experiments with *Aronia melanocarpa* fruit juice, protective effects of the juice were found in an ovariectomy-induced estrogen deficiency model, in a model of indomethacin-induced gastric ulceration, as well as in postpartum rats. Treatment of ovariectomized rats with *Aronia melanocarpa* juice leads to a reduction in anxious and depressive behavior, a certain decrease in motor activity, normalization of the lowered pain threshold and an increase in bone mineral density. In the model of indomethacin-induced gastric ulcerogenesis, pretreatment with the juice reduced the severity of injury, reduced apoptosis and lipid peroxidation. When pregnant rats were treated with *Aronia melanocarpa* fruit juice, the reduced locomotor activity of the mothers in the postpartum period was normalized, and the locomotor activity of the offspring was reduced.

In experiments with chlorogenic acid, the following effects were found: in a model of ovariectomy-induced estrogen deficiency, anxiety and depressive behavior were reduced, pain threshold and bone mineral density were increased, and when pregnant rats were treated, the reduced motor activity of mothers in the postpartum period was normalized and no changes were detected in the motor activity of the offspring.

In the first direction are also the contributions related to clarifying the potential numerous health benefits of the traditional Bulgarian spices devesil (*Levisticum officinale*), savory (plants of the genus *Satureja*) and fenugreek/chimen (*Trigonella foenum-graecum*), due to their high content of polyphenolic compounds. These data are summarized in the monograph with which Dr. Antoineta Georgieva participates in the competition.

The second direction is: **Behavioral effects of polyphenols (flavonoids and phenolic acids) in healthy rats**, promoted through 3 full-text publications.

Comparative experimental studies of equal doses of the phenolic acids chlorogenic, ferulic and gallic, and of the flavonoid quercetin have been carried out for their effects on the pain threshold, anxiety and memory processes in healthy rats. It was established that the pain threshold was not influenced by the administration of both phenolic acids and quercetin. Gallic acid and quercetin have been found to reduce anxiety and improve memory and learning processes after subchronic administration.

The third direction is: **Investigating changes in models of estrogen deficiency/osteoporosis**, which have been published in 3 full-text articles. Some of these results are based on literature data and are reviewed in articles aiming to summarize available data on behavioral changes in estrogen deficiency models, as well as summarize available data on effects of different polyphenols in osteoporosis (in models and clinical studies). Other results are original in nature and establish the multidirectional changes that

occur with ovariectomy-induced estrogen deficiency in rats: anxious-depressive behavior, reduced pain threshold, obesity, dyslipidemia, presence of inflammation, slightly reduced bone mineral density, increased bone turnover.

The fourth direction is: **Adverse drug reactions**. In this direction, a literature review on drug-induced hyperglycemia was prepared, which was published as a full-text article.

Evaluation of the habilitation thesis – monograph

The habilitation work with which Dr. Antoaneta Georgieva participates in the competition is the monograph "Traditional Bulgarian spices devesil, savory, fenugreek/chimen – potential health benefits based on the content of polyphenols", of which she is the only author. The choice of the topic for the monograph follows logically from Dr. Georgieva's main scientific interests. It is very useful and up-to-date, as it is dedicated to a very important direction of scientific research worldwide – the search for natural sources of biologically active substances with the potential to be used for the prevention and treatment of diseases.

The monograph includes 6 chapters. The first chapter gives a description of the plants devesil, savory and fenugreek/chimen, their distribution and literature data on the composition of biologically active substances in them. The bibliography for this chapter includes 38 references. The second, third and fourth chapters are devoted to the currently known data on the biological activity of devesil (with a bibliography of 40 references), savory (with a bibliography of 102 references) and fenugreek/chimen (with a bibliography of 156 references). The fifth chapter summarizes the information on the biological activity of the flavonoids quercetin, kaempferol, rutin, apigenin and luteolin, which are found in the plants described in the monograph. The sixth chapter traces the literature data on the biological activities of the phenolic acids chlorogenic, ferulic, caffeic, gallic and vanillic.

I consider it a great merit of the monograph that it contains the results of the candidate's own research. For chlorogenic acid, studies by Dr. Georgieva and co-authors are cited on its effect on memory and learning in young healthy rats, as well as on behavior and metabolism in ovariectomized rats. In the section on the effects of ferulic acid, the information obtained from experiments by Dr. Georgieva and co-authors on improving memory and learning in young healthy rats is included. There have been studies conducted by Dr. Georgieva and colleagues with gallic acid compared to the same dose of the flavonoid quercetin, which are indicated in the monograph – an anxiolytic effect and an improving effect on memory and learning in young healthy rats. In chapters five and six, for each of the biologically active substances, the bibliography includes tens-hundreds of literary sources.

The comprehensive literature review to each of the chapters of the monograph shows the competence of Dr. Georgieva to skillfully handle the scientific literature, to analyze, to make summaries and adequate conclusions. The monograph ends with a conclusion emphasizing the potential health benefits of using the spices devesil, savory, and fenugreek/chimen.

The monograph has 297 pages, has been reviewed by two reviewers and fully meets the requirements of the Act on Development of the Academic Staff in the Republic of Bulgaria for habilitation work.

Reflection of the candidate's publications in the national and foreign literature

The candidate's academic reference prepared at Medical University – Varna includes the minimum number of required citations: 7 in scientific journals, referenced and indexed in world-renowned databases with scientific information or in monographs and collective volumes, which carry 105 points, through which the required minimum of 100 points is fulfilled. At the candidate's request, 3 more citations beyond the minimum requirements are included in the academic reference.

In her author's reference for scientific contributions, Dr. Antoineta Georgieva states that the observed number of citations is 28 according to SCOPUS and 58 according to Google Scholar. This indicator shows the great interest in the international scientific community to the studies in which Dr. Georgieva has participated. This is also confirmed by the total impact factor of the journals in which the candidate has publications, which is 42.159. The candidate has an h-index 3 according to SCOPUS and h-index 4 according to Google Scholar.

Assessment of the candidate's teaching activities

Dr. Antoineta Georgieva has over 12 years of teaching experience as an assistant professor and chief assistant professor in Department of Pharmacology and Clinical Pharmacology and Therapeutics at Medical University – Varna. She is engaged in a full course of practicals/seminars in Bulgarian and English in "Pharmacology" and "Clinical Pharmacology" for students from the specialty: "Medicine" and in "Pharmacology" for students from the specialty: "Dental Medicine". She participates in conducting semester exams, in preparing of teaching programs, tests and colloquium schedules.

The report on the academic workload from the last 5 academic years shows that, with the requirement of 360 academic hours, Dr. Antoineta Georgieva had an average workload that significantly exceeded the requirement: for 2017/2018 – 397 hours, for 2018 /2019 –

maternity leave, for 2019/2020 – 453 hours, for 2020/2021 – 471 hours, for 2021/2022 – 604 hours and for 2022/2023 – 550 hours.

Dr. Antoineta Georgieva is the co-author of 4 teaching manuals for students: 3 workbooks for practicals/seminars for students from the specialties: "Medicine", "Dental medicine" and "Pharmacy", and 1 collection of test questions in pharmacology for students.

General assessment of the candidate's compliance with the minimum national requirements of Act on Development of the Academic Staff in the Republic of Bulgaria and Minimum scientometric requirements of MU-Varna, defined in the Regulations for the development of the academic staff at MU-Varna

The overall assessment was made on the basis of the academic report officially issued by MU – Varna for the candidate Dr. Antoineta Georgieva (the Table below).

A group of indicators	Minimum requirements of MU-Varna for "Associate professor" (points)	Presented evidence of chief assistant professor Dr. Antoineta Georgieva in the competition for "Associate professor" at MU- Varna (points)
A1. Dissertation for acquisition of educational and scientific degree "Doctor"	50	50
C3. Habilitation work – monograph	100	100
D7. Publications and reports published in scientific journals, referenced and indexed in world-renowned databases of scientific information	80	129.6
D8. Publications and reports published in non-refereed peer-reviewed journals or published in edited collective volumes		72.5
TOTAL (indicators D5-9)	200	202.1
E10. Citations or reviews in scientific journals referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes E12. Citations or reviews in non-refereed peer-reviewed journals		
TOTAL (indicators E10-12)	100	105

The table does not include the additional full-text publications to indicator G8 in scientific journals and collections, beyond the minimum scientometric requirements for occupying the academic position "associate professor" – 3 articles, of which 2 are in non-refereed journals and 1 – in a collection, which carry **12.48** points.

As can be seen from the table, chief assistant professor Dr. Antoaneta Georgieva, PhD, fully meets the minimum national requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria and the minimum scientometric requirements of MU-Varna, defined in the Regulations for the Development of the Academic Staff at MU-Varna.

Conclusion

The presented data on the teaching and research activities of chief assistant professor Dr. Antoaneta Georgieva show that she fully meets the requirements for the academic position "Associate professor" according to the Act on Development of the Academic Staff in the Republic of Bulgaria and the Regulations for the Development of the Academic Staff at MU-Varna.

The scientific activity of Dr. Antoaneta Georgieva meets the legal requirements. It is characterized by a variety of problems in the field of experimental pharmacology. The candidate is a built scientist with extensive experience as a researcher, masters a large number of experimental pharmacological methods, has successfully published in specialized scientific journals and has numerous citations in the international scientific literature.

Dr. Antoineta Georgieva has many years of academic experience in teaching pharmacology in Bulgarian and English. She is a trained teacher with a long teaching experience with a very high academic load. She is involved in writing pharmacology teaching manuals for students.

I know the development of Dr. Antoaneta Georgieva and I have excellent impressions of her organization, self-discipline, initiative, high motivation and diligence in her work, which are the basis of the current results and are a prerequisite for future successes.

On the basis of the objective facts and my personal impressions, I give my positive assessment and confidently claim that chief assistant professor Dr. Antoaneta Borisova Georgieva, PhD, fulfills all the requirements and possesses all the qualities necessary to occupy the academic position "Associate Professor" in the field of higher education 7.

"Health and Sports", professional direction 7.1. "Medicine", specialty "Pharmacology (incl. pharmacokinetics and chemotherapy)", for the needs of the Department of Pharmacology and Clinical Pharmacology and Therapeutics, at the Faculty of Medicine at Medical University – Varna.

REVIEWER:

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