

REFEREE REPORT

by Prof. Mariana Dimitrova Argirova, DSc

Department of Chemical Sciences, Medical University of Plovdiv

of the materials submitted for the competition for appointment of academic position "Associate Professor" at the Institute of Organic Chemistry with Center of Phytochemistry (IOCCP), at the Bulgarian Academy of Sciences (BAS)

in the field of higher education 4. Natural sciences, mathematics and informatics, professional field 4.2. Chemical sciences, scientific specialty "Bioorganic chemistry and chemistry of natural and physiologically active compounds"

In the competition for "Associate Professor", announced in the State Gazette, issue 53/25.06.2021 (pp. 188-9) and on the website of IOCCP, BAS, as a candidate participates Dr. **Manol Hristov Ognyanov** from the Laboratory of Biologically Active Substances (LBAS) – Plovdiv.

1. General presentation of the received materials

By virtue of Order № ПД-09-173 from 05.08.2021 of the Director of IOCCP I was appointed as a member of the Scientific Jury set to render a decision on a procedure for the acquisition of Academic Position (AP) "Associate Professor" in the competition announced by the Institute. According to the minutes of the first meeting of the scientific jury, held on 07.09.2021, I was assigned to prepare referee report on this competition. The only candidate for the AP is Dr. Manol Hristov Ognyanov, who has presented in electronic format all the necessary documents for the procedure in accordance with the Regulations for the development of the academic staff of IOCCP:

1. Application to the Director of IOCCP – BAS for participation in the competition.
2. Scientific autobiography.
5. Completed table certifying the fulfilment of the requirements for occupation of the AP "Associate Professor" under the Development of Academic Staff in the Republic of Bulgaria (DASRB) Act, the Rules for Implementation of the DASRB Act, as well as the requirements of IOCCP – BAS according to Appendix 1 of the regulations.
6. Diploma for obtaining the educational and scientific degree "Doctor".
7. Author's abstract of the dissertation for acquisition of educational and scientific degree "Doctor".
8. List and copies of the publications presented by the candidate in the competition for covering the criteria by group of indicators B and Г.

9. List of citations for fulfilment the criteria by group of indicators Д.

10. Extended habilitation reference for the scientific contributions in Bulgarian and English language that includes perspectives for candidate's research for the next three years.

11. List of the candidate's participations in scientific conferences, research projects, management of graduates, postgraduates, interns, etc.

2. Brief biographical data about the candidate

The candidate for AP "Associate Professor" Manol Hristov Ognyanov is a graduate of the University of Food Technology (UHT) - Plovdiv, where in 2009 he received a bachelor's degree, and in 2010 - a master's degree in biotechnology. His professional career starts in Innovative-Technological Center Ltd., Plovdiv, where he works as a researcher and chemist-analyst. He received the educational and scientific degree "Doctor" in June 2016 in the doctoral program "Bioorganic chemistry, chemistry of natural and physiologically active substances" (former code 01.05.10) after successfully completing a doctorate in the LBAS - Plovdiv, IOCCP - BAS. Since June 2017 he has held the academic position of "Chief Assistant" at the IOCCP at BAS. He has also worked as a part-time lecturer in biochemistry at UFT. He has specialized in foreign laboratories - the Institute of Biophysics at the Czech Academy of Sciences, and the University of Wageningen, Netherlands. In 2019 he was awarded the prize of BAS named after its founder - Marin Drinov, for young scientists up to 35 years for achievements in the scientific field "Biomedicine and quality of life".

3. Compliance of the submitted materials with the requirements of the Regulations on the terms and conditions for obtaining scientific degrees and academic positions at the IOCCP - BAS and the minimum requirements for field 4. Natural Sciences, Mathematics and Informatics, Professional field 4.2. Chemical sciences

Indicator group „A“ (The designations of the groups follow those in Annex 1 of the minimum requirements mentioned above in Bulgarian language)

The candidate for AP "Associate Professor" has defended his dissertation for educational and scientific degree "Doctor", which includes 5 scientific articles that do not duplicate the publications presented in this competition.

Indicator group „B“

To meet the requirements of this indicator, the candidate presents 5 scientific publications, equivalent to a habilitation thesis, which do not repeat the ones presented in other competitions for holding academic positions and acquiring scientific degrees. Three of them are in journals ranked in the first quartile, one in the second and one in the third. These articles are devoted to the study of the chemical composition of some plant polysaccharides (mainly pectin), their functional properties and possible practical applications in the food and pharmaceutical industries. The most significant are the studies on the polysaccharide composition of the "mountain tea" using partial hydrolysis of the pectin fraction and subsequent analysis of the fragments by chromatographic and mass spectral methods; the same approach is applied in the analysis of the polysaccharide fraction isolated from leeks, which approach

represents a theoretical and practical methodological contribution to the research on polysaccharides. The possibilities for utilization of polysaccharides in industrial waste from calendula processing, as well as the nutritional and functional properties of polysaccharides from carob flour have been studied. In some of these studies, the candidate for AP "Associate Professor" uses plant cell cultures of medicinal plants.

Dr. Manol Ognyanov is the first and corresponding author of three of these articles, and in one he is the second author, that gives me reason to assume that the candidate for AP "Associate Professor" has a significant contribution to the experimental work and preparation of the articles. They have been published in respected scientific journals in the field, e.g., *Carbohydrate Polymers* (third in rank among journals in polymer chemistry) and *Food Hydrocolloids* (fifth in rank in food science and technology). In total, by group of indicators, the candidate receives 105 points.

Indicator group „Г“

To meet the criteria by group of indicators Г, 15 publications are presented, of which three are in journals in the first quartile, three - in the second, one - in the fourth, and 7 publications have an impact rank according to Scopus. All these papers are published after the defense of dissertation for educational and scientific degree "Doctor", but they are basically a logical continuation of the thesis, consistent with current trends in using of plant sources in human health protection and research fits into the main research areas developed by IOCCP and LBAS - Plovdiv. Almost all presented publications study the chemical composition and antioxidant activity of medicinal plants, berries, and vegetables, and aimed to reveal the possibilities for their practical application in medicine and pharmacy.

Undoubtedly, among the most significant scientific papers in this regard are two articles on immunomodulatory polysaccharides isolated from purslane, lavender, and linden, which may be useful in supporting the compromised immune system of the gastrointestinal tract. Further research on lavender has led to the isolation of two pectin-type polysaccharides whose anti-inflammatory and gastrointestinal immunomodulatory activity may find practical use in supporting a suppressed immune system or in controlling inflammation.

The in-depth studies on the composition, structure, properties and application of polysaccharides from raw materials of economic importance are presented; data on the phytochemical composition, stability and antioxidant activity of a number of fruits, vegetables, medicinal and essential oil plants such as rose hips, chokeberry, dogwood, mukina, pepper, medicinal plants (nettle, common butterbur, water pepper, St. John's wort) wastes from the essential oil and brewing industry (milk thistle, rose, lavender, lemon balm, basil, yeast). Here, too, the leading idea is to find possible practical applications of these plant sources, based on their phytochemical composition.

The articles submitted to meet the requirements of indicator Г have been published both, in journals dealing with fundamental theoretical aspects in the field (*International Journal of Biological Macromolecules*, *Carbohydrate Polymers*) and in journals with a more practical focus (*Food Chemistry*, *Journal of Food Processing and Preservation*, *Journal of Food Measurements and Characterization*, etc.). I think that the publication of some of the articles

in the journal *Bulgarian Chemical Communications* should be positively assessed and encouraged, as the presentation of high-value scientific papers increases its international prestige.

Dr. Manol Ognyanov is the first author of one of the 15 publications presented, the second author in 5 of them, but these are publications multidisciplinary in character with wide range of specialists as co-authors, which always makes it difficult to determine the leading role in such research.

In total, according to indicators of group Γ , the candidate has 230 points.

Echo of the scientific community on the publications of Dr. Manol Ognyanov (indicator group „Д“)

The scientific works of Dr. Manol Ognyanov arouse interest among the scientific community, as evidenced by the fact that of the 20 referenced and indexed in world-wide databases of scientific information (WoS and Scopus) papers presented in this competition, 80% were cited by other researchers. There are no self-quotations or "hidden" quotes from other co-authors in the list of citations presented. A total of 109 are the citing sources, 19 of which are on articles of Dr. Manol Ognyanov, published in 2020 and 2021.

The research on chokeberry, which is a "trademark" of LBAS, arouses the greatest interest among the scientific community. Logically and expectedly, research on the immunomodulatory properties of some plant polysaccharides is also among the most intriguing articles. The most frequently cited articles make a comparative analysis with data from Dr. Manol Ognyanov's reports.

In the group of indicators \mathbb{D} , the candidate for AP "Associate Professor" collects 218 points.

Indicator „Ж“

The specific requirements of the IOCCP also include the Hirsch index of the candidate for associate professor, which refers to the overall citation of his works. At the time of the review Dr. Manol Ognyanov has an h-index of 10 (Scopus), which is significantly higher than the requirement (h-index ≥ 5).

The following table summarizes the implementation of the minimum requirements of IOCCP for AP "Associate Professor" by the candidate:

<i>Group of indicators</i>	<i>Content</i>	<i>Requirements for AP Candidate's "Associate Professor" of data IOCCP</i>	
<i>A</i>	Indicator 1	50	50
<i>B</i>	Indicator 4	100	105
<i>Г</i>	Sum of indicators from 5 to 10	220	230
<i>Д</i>	Sum of points in indicator 11	70	218
<i>Ж</i>	H-index	≥ 5	10

4. Assessment of educational and pedagogical activity and preparation of the candidate

Dr. Manol Ognyanov was the supervisor of two students, graduating with a bachelor's and master's degree at UFT. The topic of the theses is closely related to the research work of the supervisor (phytochemical characteristics and biological activity of rose hips), which has led to the successful defense of these theses. Within the Project BG05M20P001-2.002-0001 of the Ministry of Education and Science "Student Internships - Phase 1", funded by the Operational Programme Science and Education for Smart Growth the candidate for AP was the tutor of 5 students from UFT during their practice for isolation and chemical characteristics of biologically active polysaccharides from plant raw materials. He also supervised undergraduate internship of 4 other students from UFT.

5. Scientific projects

Dr. Manol Ognyanov has been a project manager as a beneficiary of Program BG051PO001-3.3.05-001 "Science and Business", in competition "Training of post-doctoral students and young scientists" and a participant in 26 scientific and applied projects. A large part of these projects has been supported by companies and EU operational programs, which indicates their practical orientation. Some of the projects have been a result of inter-institutional cooperation (local or international), others have been funded by NSF. I find a good link between the topics of the contracts and the topic of the scientific articles of the candidate, which confirms scientific and applied nature of the latter.

6. Promotion of the results of the scientific activity (scientific forums)

The candidate for AP "Associate Professor" is a participant in 41 scientific forums in Bulgaria and abroad, where the results of his research have been disseminated by 52 oral presentations or posters, 33 of which are presented after obtaining AP "Chief Assistant" in June 2017. A review of the titles of the oral and poster presentations shows that they cover the candidate's research topics and thus help to promote their results.

7. General characteristics of the candidate's activity

The impact of the submitted scientific papers for participation in the competition, assessed through the prestige of the scientific journals in which they have been published; the response of other, mostly foreign scientists, to the results of these scientific studies, evidenced by their high citation rate; active participation in various projects, including international ones, his experience as a supervisor in the preparation of diploma theses and management of internships are very serious arguments in support of the candidacy of Dr. Manol Ognyanov for acquisition of AP "Associate Professor". He is a reputable scientific specialist in the field of chemistry of natural products and biologically active substances and with the accumulated experience he can take his own pathway in science. Undoubtedly, his habilitation will open new horizons for him to teach full-time doctoral students, attract funding through national projects and active international cooperation. What I would recommend to him is to look for a wider practical application of his scientific results.

8. Personal impressions

Although I scarcely know the candidate for Associate Professor, I am impressed by the accuracy and correctness of the materials submitted for the competition (especially the included Internet links to the original documents). Obviously, he is a well-organized and precise person, and these are qualities that undoubtedly affect his performance as a researcher.

CONCLUSION

All presented documents and materials by Dr. Manol Ognyanov for participation in the competition meet the requirements for occupation of the AP "Associate Professor" under the DASRB Act, the Rules for Implementation of the DASRB Act, as well as the requirements of IOCCP – BAS according to Appendix 1 of the Regulations.

The candidate in the competition for AP "Associate Professor" has submitted adequate number of scientific papers published after the defense of "Doctor" degree. There are original scientific and applied contributions in the candidate's works, which have received international recognition since a representative part of them are published in scientific journals issued by international academic publishers. His theoretical developments have practical applicability. The scientific qualification of Dr. Manol Ognyanov is undoubted; the achieved results in the research activity fully correspond to the specific requirements of the Regulations of IOCCP-BAS for implementation of DASRB Act.

After getting acquainted with the materials and scientific papers presented in the competition, analysis of their significance and their scientific and practical value, I find it reasonable to give my **positive assessment** and **recommend** to the Scientific Jury to prepare a proposal report to the Scientific Council of IOCCP – BAS for election of Dr. **Manol Hristov Ognyanov** at the academic position of "Associate Professor" at IOCCP – BAS in the professional specialty "Bioorganic chemistry, chemistry of natural and physiologically active substances".

26.10.2021