

R E V I E W

by Prof. Kaloyan Kirilov Petrov, Head of Laboratory "Chemical and Biochemical Reactors", Institute of Engineering Chemistry, BAS

of the materials submitted for participation in a competition for the academic position "Associate Professor" at the Institute of Microbiology "Stefan Angelov" - BAS. Professional field: 5.11. Biotechnology (technology of biologically active substances) for the needs of the Department of Biotechnology, Laboratory "Metabolomics". The competition was announced in the State Gazette, issue 12 of 12 February 2021

1. General presentation of the received materials

Subject: By order № I-31 / 29.03.2021 of the Director of IMIKB-BAS I have been appointed a member of the scientific jury in a competition for the academic position of "Associate Professor" at IMIKB-BAS. In the competition for the academic position, he submitted documents as the only candidate Ch. Assistant Professor Dr. Andrey Stoyanov Marchev. The set of materials presented by Dr. Marchev is under the Regulations for the development of the academic staff of the Institute of Microbiology.

2. Brief biographical data

Andrey Marchev graduated with a degree in Biotechnology from the University of Food Technology, Plovdiv as a bachelor and master. He obtained his doctorate at the Institute of Microbiology of the Bulgarian Academy of Sciences, where since 2015 he has been a senior assistant in the Metabolomics Laboratory of the Department of Biotechnology. Since 2017 he has been working at the Center for Plant System Biology and Biotechnology in Plovdiv. His experience in the speciality is nearly 10 years.

3. Characteristics of the candidate's activity

Dr. Marchev participates in the competition for "Associate Professor" with a total number of publications - 43, of which 10 on indicator B, 32 on indicator D. Of these, 1 is a useful model, 4 are book chapters, 27 are publications in referenced and indexed journals in world-known databases of scientific information (13 in Q1, 6 in Q2 and 3 in Q3 and 1 in Q4). The candidate has also presented 11 publications in non-peer-reviewed journals with the scientific review or edited collective volumes.

The scientific contributions of Ch. Assistant Professor Dr. Andrey S. Marchev can be summarized in the following scientific fields: plant biotechnology (Publications № 22), the chemistry of natural substances (metabolomics) (Publications 9, 14 and 20) and pharmacology (Publications 8, 10, 11, 15, 19, 21). Many of the publications are devoted to interdisciplinary research. In the field of plant biotechnology, Dr. Marchev successfully manipulates the biosynthetic capacity of the plant *in vitro* systems for the biosynthesis of biologically active substances, as well as metabolic analyzes to identify and quantify active molecules in complex plant extracts. The achievements in the field are related to the development of a utility model, which refers to the composition of the nutrient medium for *in vitro* propagation of the plant *Haberlea rhodopensis* Friv. (Orpheus flower), which leads to a significantly higher accumulation of myconoside compared to the wild plant. A method for initiating transformed root cultures of rare Bulgarian plant species, such as *Verbascum eriophorum* and tobacco, has been developed for the purpose of biosynthesis of t-resveratrol and its derivatives t-piceatanol and t-pterostilbene. In the field of metabolomics, an MRI / HPLC-based platform has been developed to study metabolic variations in medicinal plants to study the authenticity and quality of medicinal plant

preparations, e.g. the content of salidroside, rosin, rosin and rosin in *R. rosea*. In the field of pharmacology, Dr. Marchev deals with the study of the anti-inflammatory, immuno-modulating and antiviral activity of plant extracts (from *H. rhodopensis*, *Veronica austriaca*, *Rhodiola*, *Nepeta nuda*, etc.), as well as purified active compounds.

4. Fulfillment of the criteria for academic growth

The reports for fulfillment of the requirements according to the Law for development of the academic staff, and the additional requirements of IMIKB for participation in a competition for "associate professor" is in accordance with Professional Area 5.11. Biotechnology (Technology of biologically active substances). Dr. Marchev's scientometric indicators meet the requirements of ZSRASRB for indicators "B" and "Г". The requirements of criterion "Д"- citations, the applicant exceeds many times, and despite the fact that criterion "E" is not mandatory for "associate professor", the candidate fills in with 216 points. It is explained by the fact that the remarkable scientific production of the candidate is based on good funding of research. In 3 of them as a supervisor) The data provided by Dr. Marchev prove that all criteria are exceeded. In case of the required 20 articles in refereed journals, he presents 43, and in 17 of them the first and/or corresponding author has 218 citations (necessary 100) and a total impact factor of 86.63 (required 20) and h-index 9. (if required - 5) Has participated in 12 projects (required 3).

5. Perspectives

Dr. Marchev's plans set out to reveal a clear vision for the future of scientific research. They can be summarized as follows: (1) Characterization of primary and secondary metabolism of plants, plant in vitro cultures and microorganisms, (2) study of secondary metabolism in plant in vitro systems and application of metabolic engineering to increase the yield of target metabolites, (3) plant in vitro systems for the biosynthesis of secondary metabolites, (4) omics approaches to study the effect of plant extracts on disease regulation.

6. CONCLUSION

The documents and materials submitted by Ch. Assistant Professor Dr. Andrey Marchev meet all the requirements of the Law for the Development of the Academic Staff in the Republic of Bulgaria (ZRASRB), the Regulations for application of ZRASRB and the Regulations of IMIKB at BAS for the academic position "Associate Professor". In the works of the candidate, there are original scientific and applied contributions, which have received international recognition as a representative part of them are published in renowned scientific journals and scientific journals published by international academic publishers. The results achieved by Dr. Marchev in the scientific activity, the project management and the impressive number of scientific publications exceed the increased requirements for the position of "Associate Professor", laid down in the PPMRASB of IMIKB After getting acquainted with the materials and scientific papers presented in the competition, analysis of their significance and the scientific, scientific-applied and applied contributions contained in them, I give my POSITIVE assessment and recommend to the Scientific Council of IMiKB to elect Dr. Andrey Stoyanov Marchev for "Associate Professor" in the professional field 5.11. Biotechnology.

June 16, 2021

Reviewer:
(Prof. Kaloyan Kirilov Petrov)