

## OPINION

**by Associate Professor Nadezhda Traycheva Petkova-Ognyanova, PhD - Associate Professor at the University of Food Technology - Plovdiv**

of the materials submitted for participation in the competition to hold the academic position of 'Associate professor' at the Institute of Organic Chemistry with the Center for Phytochemistry (IOCCP), BAS by field of higher education 4. 4 Natural sciences, mathematics and informatics, professional management 4.2. Chemical sciences, scientific specialist "Bioorganic chemistry, chemistry of biologically and physiologically active substances" In the competition for "associate professor", announced in the State Gazette, no. 102 of 08.12.2023 and on the website of (IOCCP), BAS,

### **1. General presentation of the procedure and the candidate**

Only one candidate submitted documents for participation in the announced competition: Chief Assistant Prof. Tsvetelina Emilova Doncheva Ph.D from laboratory of Chemistry of natural substances, Institute of Organic Chemistry with Phytochemistry Center (IOCCF), Bulgarian Academy of Sciences (BAS).

Chief Assistant Professor Tsvetelina Doncheva, Ph.D., obtained her PhD in 2010 with the thesis topic "Alkaloid composition of species from the tribe Datureae". From 1999 to 2010, she held the position of chemist, and from 2010 to the present, she held the position of Chief Assistant Prof. at the Institute of Organic Chemistry with the Phytochemistry Center, Bulgarian Academy of Sciences. The scientific and professional skills of the candidate are related to the study of the isolation, structural elucidation, analysis of secondary metabolites, search for new biologically active compounds.

The applicant is a member of the collective of inventors of registered utility model 4533/13.09.2023 "Composition of electrospun fibrous materials containing an extract of *Melissa officinalis* or two extracts of *Melissa officinalis* and of *Hypericum perforatum*", but this is not included in the competition materials, but only in the CV.

The presented by Chief Assistant Professor Doncheva's set of materials on a digital medium is in accordance with the Regulations for the Development of the Academic Staff of IOCCF, and meets the criteria of IOCCF-BAS for occupying the academic position "Associate Professor". The candidate chief assistant Chief istant Professor Doncheva has submitted a total of 19 scientific works and a list of 14 research developments. 18 non-dissertation scientific papers, one book chapter and 14 research projects are accepted for review. The distribution of scientific works according to the relevant Q factors is as follows: in indicator B there are 6 publications, 2 in Q2 and 4 in Q3, and in indicator G there are 12 publications (2 in Q1, 5 in Q2, 3 .in Q3 and 2 in Q4) and one book chapter. This makes a total of 18 publications for the contest, 2 in Q1, 7 in Q1. in Q2, 7 in Q3 and 2 in Q4. The presented number of publications fully meets the criteria laid down in the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of the LDASRB, the Regulations for the Implementation of the LDASRB of the BAS and the Regulations of the IOCCF -BAS, with 100

points being collected in indicator B , and in indicator G 234 points from 200 max and 300 points in indicator D. All documents are properly prepared and no inconsistencies were found.

## **2. General characteristics of the applicant's activity**

It is clear from the presented publication activity that she is a leading scientist in the study of alkaloids from various plant species and is a specialist in alkaloid chemistry and in the chemistry of natural substances. Chief Assistant Professor Tsvetelina Doncheva was the scientific supervisor of two graduate students and scientific consultant of one foreign PhD student. She has experience in working on projects, she was a participant in a total of 14 projects, 9 of which were international. She was also the manager of 3 international projects. Her expertise also includes the preparation of reviews of scientific articles for international refereed publications: Natural Product Research, Chemistry and Biodiversity, Molecules, BMC Chemistry, Scientific Reports, Bulgarian Chemical Communications (BCC).

The documents submitted for the competition for “Associate Professor” lack a list of all the candidate's publications to date, and only those for participation in the competition are presented. A search of the SCOPUS database shows that she is co-author of 22 scientific publications in refereed and indexed journals. Of these, 19 scientific works (18 publications and one book chapter) were included in the competition for “Associate Professor”. All submitted publications for the competition are written in English. No standalone articles attached. In all the presented publications Chief Assistant Professor Doncheva is a co-author. 1 publication [G2], 1 single book chapter with 1 co-author [G13], 1 publication with two co-authors [B6], and the remaining 16 scientific publications with three or more co-authors are distinguished. From the presented 19 scientific works Chief Assistant Professor Doncheva is a corresponding author in 9 of them and is the first author in 10 of them, which undoubtedly shows her leading contribution to their analysis, preparation and publication. A large part of the publications contained data accumulated during work on projects. All publications are published in refereed international journals with an impact factor or impact rank, indexed in the world databases Scopus and Web of Science.

Regarding the educational and pedagogical activity of Chief Assistant Professor Doncheva should be noted for his active work with students under the Operational Program Project "Science and Education for Intelligent Growth 2014-2020" - BG05M2OP001-2.002-001 "Student Practices" and Project under the Operational Program "Human Resources Development 2007- 2013"- BG051PO001-3.3.07-0002 "Student practices". The participation of the candidate in the numerous national and international projects is undoubtedly connected with work with graduates and doctoral students. Under the supervising of Chief Assistant Professor has defended two graduated students. She was also a scientific advisor to a Mongolian PhD student. In the attached documents, no information about lecture courses and published teaching aids can be found.

Her scientific results have been reported at 11 scientific forums, of which 4 national and 7 international forums held in Bulgaria.

The presented 19 publications, summarized as a habilitation work, are related to the chemistry of natural substances and, in particular, secondary metabolites, mainly alkaloids. Only one of the publications investigated the triterpene composition of the plant species *Gentiana cruciata* [G9], and in a publication [G11] amphibians of the species *Triturus ivanbureschi* were investigated.

The scientific contributions presented in the competition are of a scientific-applied nature and can be summarized in three directions:

1. Study of the composition, structure and biological activity of secondary metabolites isolated from hitherto unexplored, rare and/or endemic plant species and organisms – **11 publications** [B2, B3, G2, G5, G6, G8, G9, G10, G11, G12 and G13]

2. Comparative analysis of the alkaloid composition of plants of the genera *Fumaria*, *Glaucium*, *Coridalis* and *Hypecoum* and derivation of taxonomic and chemotypic relationships - **5 publications** [B1, B4, B5, B6, G1 and G4].

3. Determination of the alkaloid composition of *in vitro* cultivated and *ex vitro* adapted endemic plants – **2 publications** [G3 and G7].

Significant results have been achieved in the discovery of new structures, the knowledge of the alkaloid profile of many plant species has been upgraded. The obtained data are up-to-date with important potential significance and application in the phytochemistry, pharmaceutical and biotechnology industries.

The prospects for development in a future three-year period are outlined, which include:

- continuation of research on the alkaloid profile of medicinal, endemic and hitherto unexplored plants and search for a possible structure-biological activity relationship;
- study the influence of various environmental factors on the content of alkaloids in plants;
- development of methods for obtaining biologically active substances;
- continuation of existing and future collaborations, as well as application to national and international research funding programs.

At the time of submission and review of the documents, a total of 200 citations were noticed (150 of them by Scopus/WoS), h-index 7 (Scopus, without self-citation). Data on the impact factor of scientific publications can be found in the citation reference document 8.1, and according to the attached information, the total impact factor of the 19 attached scientific papers is worth 12,261. Undoubtedly, all publications contain valuable and important results that have found international resonance and citation in prestigious journals of publishers such as Elsevier, Springer, MDPI, etc. Three publications stand out among the most cited scientific articles: 1) Berkov, S., Zayed, R., **Doncheva, T.** Alkaloid patterns in some varieties of *Datura stramonium*. *Fitoterapia*, 77, 3, 2006, ISSN:0367326X, DOI:10.1016/j.fitote.2006.01.002, 179-182. JCR-IF (Web of Science):2.35 cited 53 times, enjoyed by 2) **Doncheva, T.**, Berkov, S., Philipov, S.. Comparative study of the alkaloids in tribe Datureae and their chemosystematic significance. *Biochemical Systematics and Ecology*, 34, 6, 2006, ISSN:0305-1978, 478-488. JCR-IF (Web of Science):0.97 - cited 20 times and 3) **Doncheva, T.**, Kostova, N., Yordanova, G., Saadi, H., Akrib, F., Dimitrov, D., Philipov, S.. Comparison of alkaloid profile from *Glaucium corniculatum* (Papaveraceae) of Algerian and Bulgarian origin. *Biochem. Syst. Ecol*, 56, 2014,

278-280. ISI IF:1.063 – 14 citations. As a result of the above, it is undoubtedly clear that Chief Assistant Professor Tsvetelina Doncheva, PhD is an internationally recognized scientist and specialist in the field of chemistry of natural compounds and in particular in the chemistry and structure of alkaloids.

### **3. Critical remarks and recommendations**

I have no critical remarks about the candidate. I recommend that in future competitions all scientific indicators of the journals should be given according to both Scopus/WoS databases. I recommend that the candidate continue to actively participate in projects and increase her publication activity in higher quartile journals from Q3. To strengthen participation in international scientific forums outside Bulgaria. Given the great experimental experience and the accumulated new knowledge in the field of alkaloids, I believe that in the future a monograph or a book can be written dedicated to the achievements in this field of the chemistry of natural compounds.

### **CONCLUSION**

The documents and materials presented by the Chief Assistant Professor Tsvetelina Doncheva meets all the requirements of the Law on the Development of the Academic Staff in the Republic of Bulgaria (LDASRB), the Regulations for the Implementation of the LDASRB, the Regulations for the Implementation of the LDASRB of the Bulgarian Academy of Sciences and the Regulations of the IOCCP-BAS. The candidate in the competition has submitted a significant number of scientific works published after the materials used in the defense of the PhD. The candidate's works contain original scientific and applied contributions that have received international recognition, a representative part of which has been published in journals and scientific collections issued by international academic publishing houses. Her theoretical developments have practical applicability. The scientific qualification of the chief assistant Tsvetelina Doncheva is undoubted. The achievements of the Chief Assistant Professor Tsvetelina Doncheva's results in the research activity fully correspond to the specific requirements of the Regulations of the IOHTCF-BAS for the application of LDASRB.

After getting acquainted with the materials and scientific works presented in the competition, analyzing their significance and the scientific, scientific-applied and applied contributions contained in them, I find it reasonable to give my positive assessment and to confidently recommend the Scientific Jury to prepare a report-proposal to The Scientific Council of IOCCF-BAS for the election of Tsvetelina Doncheva to the academic position of 'Associate Professor' in IOCCF -BAS in professional direction 4.2. Chemical sciences, scientific specialty "Bioorganic chemistry, chemistry of biologically and physiologically active substances".

11.04. 2024

Prepared the opinion: .....

(Assoc. Prof. Ph.D. Eng. Nadezhda Petkova-Ognyanova)