# REVIEW

on the materials in a competition for the academic position "Associate Professor", field of higher education 6. Agricultural sciences and veterinary medicine, PN 6.4. Veterinary medicine, scientific specialty "Animal Pathology", in the discipline "Biochemistry", announced by Forestry University in the State Gazette - no. 24/25.3.2022, procedure code ELA-AsP-0322-81.

**Only one candidate for participation in the competition:** Assistant Professor Metodi Hristov Petrichev, PhD

**Reviewer:** Albena Georgieva Jordanova, professor of Biochemistry, PN 4.3. Biological Sciences from the Faculty of Medicine, Sofia University "St. Kliment Ohridski"

## 1. Brief biographical data about the candidate

The only one candidate in the announced by the Forestry University in SG no. 24/25.3.2022 competition for Assistant Professor in Biochemistry is chief assistant, PhD Metodi Petrichev - lecturer in the discipline of Biochemistry in the Department of Plant Pathology and Chemistry at the Forestry University, Sofia. His teaching activity includes conducting exercises and seminars in the discipline of Biochemistry, participation in semester exams, preparation of study materials, etc. From the attached curriculum vitae, it is clear that the candidate has extensive experience as the head of a laboratory in Ruse for analyzes of food, feed and biological materials; he was also a veterinarian at the "Care for them" clinic, Sofia and at Sudahim EOOD, Sofia; head of the National Reference Laboratory - Mycotoxicology and Ecotoxicology at the Bulgarian Food Safety Agency - NDNIVMI, Sofia; teacher of veterinary medicine at Professional High School of Veterinary Medicine and Agriculture "St. George" - Kostinbrod.

In the period 2003-2006, the candidate developed his dissertation on the topic "Bioavailability, clinical efficacy and toxicity of iron methionate in laboratory animals and pigs" to obtain the educational and scientific degree "PhD of Veterinary Medicine" at the Faculty of Veterinary Medicine of Forestry University - Sofia.

In addition, Metodi Petrichev received certificates after completing courses on the Increased level of official control of certain feed and food of non-animal origin from the European Commission DG "Health and Food Safety" - Pisa, Italy 2010, and Naples, Italy 2011, as well as a certificate in Pharmacokinetics from the European Association of Veterinary Pharmacology and Toxicology/European College of Veterinary Pharmacology and Toxicology - Lisbon, Portugal, 2003. He is a member of the editorial board of: *Global Journal of Agriculture and Soil Science*, (Springfield Publishing); *Open Access Journal of Biogeneric Science and Research*; *Journal of Pharmaceutical Research and Development* (Uniscience Publishers LLC, USA) and *International Journal of Zoology and Animal Biology*.

## 2. Conformity of the applicant's submitted documents and materials with the requirements, according to the Regulations for Forestry University, Sofia

The submitted materials for participation in the competition for Associate Professor in Biochemistry, announced by the Forestry University in SG no. 24/25.3.2022, comply with the requirements of the Regulations for the Development of the Academic Staff of the Forestry University. According the requirements of the Forestry University, Sofia the candidate has attached the following documents:

*1. CV according to the European model;*

*2. Notarized copies of diplomas for completed higher education;*

*3. Notarized copies of the diploma for the acquired PhD educational and scientific degree;*

*4. Document for an occupied academic position;*

*5. Medical certificate;*

*6. Criminal record certificate;*

*7. Certificate (official note) for internship in the specialty;*

*8. Reference-self-assessment for the fulfillment of the minimum national requirements for the academic position "Associate Professor" and for the additional requirements under Art. 2a (paragraphs 2, 3 and 4) for holding the same academic position;*

*9. Reference for the educational and expert activities for the fulfillment of the additional requirements under Art. 2a (5) for Forestry University, Sofia;*

*10. List of publications, inventions and other scientific and applied results;*

*10.1. List of publications (2003-2022);*

*10.2. List of citations (2003-2022);*

*11. Summaries of works in Bulgarian and English;*

*12. References to the scientific and scientific-applied contributions;*

*13. Information card in Bulgarian and English;*

*14. List of additional written materials certifying other professional and creative performances, according to Art. 52;*

*15. Appendix 1. Copies of the applicant's additional written materials;*

*16. Appendix 2. Copies of the applicant's publications;*

*17. Appendix 3. Copies of publications with citations.*

**3. Evaluation of the candidate's educational and teaching activities**

According to the attached official note assistant professor Metodi Hristov Petrichev, PhD, held the academic position of "Assistant" from 11/09/2017 to 24/09/2019, after which he was the „Assistant Professor" until now in the Department of "Plant Pathology and Chemistry", Faculty of Ecology and landscape architecture" of Forestry University. From the attached reference, it can be seen that his internship at Forestry University was 4 years, 6 months and 20 days as of 31.03.2022, which is in accordance with requirements of Forestry University, Sofia.

The report on the educational activity of Assistant Professor Metodi Petrichev shows that he has full individual academic employment as a Biochemistry teacher for students of the Veterinary Medicine specialty (with teaching in Bulgarian and English). For the academic year 2019-2020 the total annual employment is 636.8 hours, and for the academic year 2020-2021 – 650.5 hours. In addition, there are also 33 hours of total annual employment for the

2020-2021 and 2021-2022 academic years in Biochemistry for students from the bachelor's program of the specialty "Ecology and Environmental Protection" at Forestry University.

**4. Evaluation of the candidate's scientific, applied scientific and publication activity**

In the attached documents for participation in the competition for Associate Professor of Biochemistry at Forestry University, Sofia, the candidate Metodi Petrichev presented a list of his publications for obtaining the PhD scientific and educational degree, and for participation in the current competition he presented a monograph on the topic "Mycotoxicoses in productive animals and basic methods for the analysis of mycotoxins" and 28 scientific publications.

The publications related to the dissertation on the topic *"Investigation of the toxicity, bioavailability and anti-anemic effect of the feed additive iron complex of methionine in laboratory animals and pigs"* are 4 and were published in the period 2004-2005. The dissertation was defended successfully in 2006 .

In the current competition Metodi Petrichev participated with one monograph, 14 articles and reports published in scientific publications, referenced and indexed in world-famous databases with scientific information and 15 articles and reports published in non-refereed journals with scientific review or published in edited collective volumes. According to the minimum requirements of the National Center for Information and Documentation (NACID) by groups of indicators for the various scientific degrees and academic positions for acquiring the academic position "Associate Professor" in Professional field 6.4. Veterinary medicine is required to meet the criteria described in the table below. For comparison, the indicators of Assistant Professor Metodi Petrichev for his participation in the current competition are shown.

| Group of indicators | Content | Associate Professor | Scoring of Assistant Professor Metodi Petrichev, PhD |
|---|---|---|---|
| A | Indicator 1 | 50 | **50** |
| B | Indicators 3 or 4 | 100 | **100** |
| G | Sum of Indicators 5-12 | 200 | **223.42** |
| D | Sum of Indicators 13-15 | 50 | **220** |

According to the minimum national requirements in **group A, indicator 1.** *Dissertation for awarding PhD educational and scientific degree* Associate Professor Petrichev, who successfully defended his dissertation on the topic "Investigation of the toxicity, bioavailability and anti-anemic effect of the feed additive iron complex of methionine in laboratory animals and pigs" in 2006, has **the required 50 points.**

In **group B, indicator 3**, a monograph on *"Mycotoxicoses in productive animals and basic methods for mycotoxin analysis"* is presented, published in 2021. ISBN 978-619-91033-3-3, with reviewers Prof. Dr. Petar Hristov Dilov and Todorka Yankovska-Stefanova, PhD. The monograph contains 114 pages and presents summarized results of several years of studies in our country on the mycotoxicological status of grain fodder and a study of the amounts of aflatoxins, zearalenone and other mycotoxins in them. Some basic principles in conducting mycotoxin analyzes are discussed, as well as the importance of constant control of their content in food forage for modern animal husbandry. The discussed problem also has a

social significance, since residual amounts of mycotoxins can also be found in products of animal origin, which represents a real risk to human health. According to this indicator Assistant Professor Metodi Petrichev, PhD, **has the required 100 points.**

In **group G, indicator 7** – *Articles and reports published in scientific publications, referenced and indexed in world-famous databases with scientific information*, 14 articles are included (for each publication, the points are calculated according to the formula 30/n, where n is the number of the authors). The publication *"The effect of copper complex of methionine compared with copper sulfate in growing pigs"* is in the *Web of Science* indexed *Turkish Journal of Veterinary and Animal Sciences* - for 2010 the journal is Q3, SJR = 0.256 https://www.scimagojr.com/journalsearch.php?q=89762&tip=sid&clean=0. The article *"Pharmacokinetics of Ciprofloxacin in broiler chickens after single intravenous and intraingluvial administration"* was published in a journal indexed in *Scopus*: *Macedonian Veterinary Review*, Q4, SCImago Journal Rank (SJR), 2021: 0.16 - https://www.scimagojr.com/journalsearch.php?q=21100268419&tip=sid&clean=0; One of the publications *"Effect of Fumonisin B1 on lymphatic organs in broiler chickens - pathomorphology"* (2011) is in the scientific journal *Bulletin of Veterinary Institute in Pulawy* - https://www.sciendo.com/journal/JVETRES, indexed in *Sciendo* - https://sciendo.com/it (since 2014, the journal has a new name - *Journal of Veterinary Research*). For 2011 it is with SJR= 0.267, Q3: Journal of Veterinary Research (Poland). Also indexed in *Sciendo* is the scientific journal *Journal of Biomedical and Clinical Research*, JBCR/Medical University, Pleven, https://sciendo.com/it/journal/JBCR, where an article "Pharmacokinetics of zinc in broiler chickens after single intraingluvial administration with zinc aspartate" was published in 2014 The publication *"Pharmacokinetics of some inorganic and organic zinc compounds in broiler chickens"*, 2014, is in a journal published by Trakia University - *Agricultural Science and Technology*, (https://www.cabdirect.org/cabdirect/abstract/20153378736), which is included in the list of modern Bulgarian scientific publications, referenced and indexed in world-famous databases with scientific information. The remaining 9 publications are in journals indexed in the CABI database, and most of them are in *Bulgarian Journal of Animal Husbandry* (https://animalscience-bg.org/page/bg-topmenu/about.php) and *Bulgarian Journal of Agricultural Science* - both journals are publications of the Agricultural Academy (https://animalscience-bg.org/page/en-topmenu/home.php), as well as in *Ttradition and modernity in veterinary medicine* (edition of the Faculty of Veterinary Medicine, Forestry University - https://scij-tmvm.com/). The latter journal is reported to have an impact factor for 2020-2021 (https://www.citefactor.org/impact-factor/impact-factor-of-journal-TRADITION-AND-MODERNITY-IN-VETERINARY-MEDICINE.php), but there is no information to include it in the list of modern Bulgarian scientific publications, referenced and indexed in world-famous databases with scientific information (https://randii.nacid.bg/register/search). **The total number of points for indicator G7 from the 14 scientific publications is 181.78.**

In **group G, indicator 8** are included 15 scientific articles and reports of the candidate in the competition for Associate Professor, published in non-refereed journals with scientific review or published in edited collective volumes (for each publication, points are calculated according to the formula 10/n, where n is the number of the authors). The sum of the points according to this indicator is 41.64 points, so **the total number of points in group G of the**

**candidate in the competition is 223.42**, which is consistent with the minimum national requirements of the National Center for Information and Documentation.

**4.1. Participation in scientific, scientific-applied and educational projects**

There is no information on this indicator, as only in the attached file "Scientific articles related to the dissertation and projects" there is a list of participations in 3 scientific projects at the National Diagnostic Research Veterinary Medical Institute, Sofia, as well as participations in 2 projects with external departments and companies. The exact data on these projects are missing, it is not indicated whether they are international or national, where their funding comes from and what is the role of the candidate in the competition in them.

**4.2. Characteristics of published scientific results**

The published scientific results of Assistant Professor Metodi Petrichev are directed in the following important applied directions: pharmacology; toxicology; ecotoxicology; mycotoxicology and risk assessment of feed materials and feeds.

The scientific research and analyzes in the monograph published in 2021 entitled *"Mycotoxicosis in productive animals and basic methods for the analysis of mycotoxins"* were carried out during the period when the candidate in the competition was the head of the National Reference Laboratory "Mycotoxins" - feed raw materials, feed and animal feed and RVS-Ruse EOOD (Laboratory for analyzes of food, feed and biological materials). The monograph describes the contamination of cereals and other feeds with mycotoxins and the manifestations of mycotoxicoses, and is aimed at specialists in veterinary medicine, ecologists, feed producers, animal breeders, food safety laboratory workers, etc. The metabolites of mold micromycetes exert their destructive effect on the animal organism and cause various effects *in vivo*. The most important damaging properties of mycotoxins are: hepatotoxic, nephrotoxic, cardiotoxic, dermonecrotic, carcinogenic, teratogenic and immunosuppressive. This diverse mode of action of mycotoxins also determines their broad clinical symptoms. In addition to general information about mold micromycetes and mycotoxins, the main diseases caused by mycotoxins are described in detail: aflatoxicosis, ochratoxicosis, fusariotoxicosis, fumonisinotoxicosis and stachybotryotoxicosis. Separate chapters are devoted to measures for the prevention and control of mycotoxicosis in animals, as well as methods for the analysis of mycotoxins are described. It would be useful if the modern highly informative biochemical methods for the separation, purification and analysis of biologically active substances are described in more detail and illustrated with appropriate diagrams and figures for a more detailed understanding of the essence of the applied methods.

From the publications presented for participation in the competition for Associate Professor, the scientific focus of the research of the Assistant Professor Metodi Petrichev is clearly visible - research of biochemical parameters in clinical veterinary toxicology. A variety of studies have been conducted to determine the effects of the ferridextran products *Ferridil-200* and *Fervetrin-200* on laboratory animals; to study the effect of *Fumonisin B1* on the lymphatic system of chickens; experimental determination and comparative study of the accumulation of copper and copper sulfate in rats and pigs; study of the pharmacokinetics of zinc in broiler chickens; Pharmacokinetics of *Ciprofloxacin* in broilers and pigs; study of the toxicity of *Tilmicosin* in rats, of *Nitroxylin* in sheep, calves and buffaloes, as well as

intoxications with carbamate insecticides and the toxicological risk to the affected animals. Scientific research has both a fundamental importance and a specific applied effect for adequate treatment and prevention of severe poisoning in farm animals, leading to serious economic gains.

**4.3. Reflection of the candidate's scientific activity in the literature (citability)**

In relation to this indicator, the citations of the scientific works of the Assistant Professor Metodi Petrichev are represented, according to the requirements of NACID, and are divided into 3 groups:

***Indicator D.13.*** Citations or reviews in scientific publications referenced and indexed in world-renowned databases of scientific information or in monographs and collective volumes. **5 quotes presented x 15 points=75 points.**

***Indicator D.14.*** Citations in peer-reviewed monographs and collective volumes. **1 quote presented x 10 points = 10 points.**

***Indicator D.15.*** Citations or reviews in non-refereed peer-reviewed journals. **9 quotes x 5 points = 45 points are presented** (in the Table in the Self-Assessment Reference file, Appendix 2, 15 points are incorrectly given per quote instead of 5 points).

The total amount of points regarding the citability of Associate Professor Metodi Petrichev is **130 points, with a required minimum of 50 points, according to the requirements of NACID.**

**4.4. Contributions in the works of the candidate/s (scientific, scientific-applied, applied)**

The applications for participation in the competition for „Associate Professor" monograph and scientific publications are aimed at the fields of: pharmacology (publications 2, 5, 6, 9, 10, 11, 12, 20, 21); toxicology (publications 1, 8, 18, 19, 22, 23); ecotoxicology (publications 7, 14, 15, 17); mycotoxicology (monograph and publication 4) and risk assessment of feed materials and feeds (publications 13 and 14).

1. Equivalence was established in terms of clinical effectiveness between the Bulgarian product Nitroxynil 34% and Trodax 34% in sheep, cattle and buffalo infected with *Fasciola hepatica* and some gastrointestinal nematodes *(Publication 2).* The pharmacokinetics of ciprofloxacin (Aktavis OOD, Sofia) were studied in pigs and broiler chickens after a single intravenous and intramuscular administration *(Publications 5 and 6).*
2. The pharmacokinetics of zinc in broiler chickens after a single intralingual administration at a dose of 50 mg/kg was studied. Zinc methionine has been found to be absorbed faster than zinc sulfate in the digestive tract of chickens. The effect of a single dose of 50 mg/kg, 5% zinc aspartate suspension, as well as 5% zinc methionate suspension in 2% carboxymethyl cellulose solution was also investigated *(Publications 9, 10 and 11).*
3. A daily dose of 20 ppm Cu MET added to pig feed was found to have positive effects on blood hemoglobin on day 10 and erythrocyte levels on day 20 and liver copper and iron deposition and spleen of pigs compared to the control group *(Publication 12).* Oral administration of ISCM was found to have a better anti-anaemic effect than Ferrodextran-100 and to favor body mass *(Publication 20).*

4. Ferric methionate administration to pregnant sows has been found to result in increased body weight, higher iron content in colostrum, and higher iron levels in the liver and spleen of newborns *(Publication 21 ).*
5. It was established that according to toxicity (in white mice) and utilization in rabbits, the products Feridil 200 (Sudahim, Bulgaria) and Fervetrin 200 (Seva, France), as well as Ferodextran-100 (Alvetra, Austria), do not differ significantly, have identical antianemic effect and correspond to B.V.C., 1965 *(Publications 22 and 23).* The median lethal dose of MKM in white mice was established, and supplementation of MKM at a concentration of 20 ppm in rats for 20 days favorably affected hematological parameters, urea, and body weight *(Publication 19).* The oral toxicity of tilmicosin (Biovet AD) was studied in rats and the product was determined to be of low toxicity *(Publication 8).*
6. The high mortality rate (20% of the total number of cows and over 70% of those imported from Holland) was found to be due, in addition to neurohormonal stress, to the large amount of unfit brewer's mash in the ration *(Publication 18).*
7. It has been established that for lifetime diagnosis of carbofuran poisoning there is the establishment of hyperglycemia and a high inhibitory effect (over 40-50%) of acetylcholinesterase (AchE) in blood and plasma, and postmortem – inhibition of AchE in the cerebral cortex *(Publication 1).*
8. Chemotoxicological analyzes of bee samples were made to detect anticholinesterase pesticides. It is shown that the number of poisoned bee colonies in Bulgaria for the period 2003-2006 is 2545 *(Publication 14).* A study of bee poisoning and the presence of parasites - spores of *Nosema sp.* and *Varoa destructor* mites. In the chemical toxicological analysis, it was found that anticholinesterase pesticides (FOS and CS) pose a high toxicological risk *(Publication 17).* Samples of internal organs from wild mammals and birds were analyzed and found that in almost 1/4 of the cases the cause of death was intoxication with anticholinesterase pesticides *(Publication 15).*
9. The effect of activated waters on plants after adverse chemical effects imitating acid rain was studied. The experiments were carried out with coriander, oregano, lemon balm and two types of mint, which were treated with solutions of pH 4.87, 5.76 and 5.91, resembling acid rain. Coriander, mint and oregano were found to be most vulnerable to the effects of acid rain, while lemon balm was the most resistant *(Publication 7).*
10. Described and studied with a detailed description of the main diseases caused by mycotoxins: aflatoxicosis, ochratoxicosis, fusariotoxicosis, fumonisinotoxicosis and stachybotryotoxicosis. Oral toxicity doses of mycotoxins and biochemical markers have been established that can be used as indicators of toxicosis reduction *(Monograph, Publication 4).*
11. Conducted toxicological analyzes of local feed samples and found that 21% of compound pig feed and 35% of grain feed were contaminated with anticholinesterase pesticides and posed a serious toxicological risk to large and small ruminants, birds and rabbits *(Publications 13 and 14).*

**5. Evaluation of the candidate's personal contribution**

After familiarizing myself with the research, publications and article citations of Assistant Professor Metodi Petrichev, I can summarize that the obtained results and the formulated contributions were carried out with his active participation and are to a large extent his personal merit.

**6. Critical notes and recommendations**

I have the following remarks regarding the documentation of Assistant Professor Metodi Petrichev for participation in the announced competition:

**1.** In the electronic version of the provided documents, there is no order and it is very clear what the documents are - their names are given with numbers, without any information about them. In addition, the more of the files are scanned and are difficult to interpretation.

**2.** If there were web-links to each article in the list of publications, it would be much easier to find out specific rank of the journals and to make the scientific statistics for the articles. The same applies to the list of citations, the file is also given as a scan and very difficult to analyze and discuss.

**3.** There is no list and evidence of participation in scientific projects, as well as a list of participation in international and national conferences.

**4.** Described contributions are all about the obtained specific results, and they do not pay attention on the general contributions of the research and their benefit in business and economic aspect. Therefore, in my review I have tried to combine most of these contributions in a summarized and informative form.

**7. Conclusion**

After careful consideration and analysis of the submitted documents for participation in the Forestry University announced in SG no. 24/25.3.2022 competition for Associate Professor in Biochemistry, I declare that the candidate Metodi Hristov Petrichev, is consistent with the minimum national requirements of the National Center for Information and Documentation (NACID). **I SUGGEST Assistant Professor Metodi Hristov Petrichev, PhD, to take the academic position "Associate Professor" in the discipline "Biochemistry" from PN 6.4. Veterinary Medicine.**

Reviewer Signature:

The review was submitted on: 7/25/2022