

OPINION

by Prof. Irena Georgieva Markovska,
University "Prof. Dr. Asen Zlatarov", Burgas
member of the scientific jury according to the order of rector RD №236/15.07.2024
of the materials submitted for participation in the competition for occupying the academic
position of "associate professor", in the field of higher education 5. Technical sciences,
professional direction 5.11 "Biotechnologies", scientific specialty "Technology of biologically
active substances (incl. enzymes, hormones, proteins)",
in which Galina Dimitrova Yordanova, Ph.D. participated as an only candidate.

1. Brief biographical data

Chief assistant Galina Dimitrova Yordanova, Ph.D. graduated in 2000 University "Prof. Asen Zlatarov" – Burgas with a Master's degree as Engineer - Biotechnologist in the professional field 5.11. "Biotechnologies".

Since 2006 she has been a PhD student at the university, and in 2013 she defended her PhD thesis in the professional field 5.11 "Biotechnologies", in the scientific specialty "Technology of biologically active substances (incl. enzymes, hormones, proteins)".

Chief assistant Galina Dimitrova Yordanova, Ph.D. has more than 18 years of academic and teaching experience in the field of education.

During the period 2006 - 2007 she was a part-time lecturer at the University.

From 2007 to 2014 she is a full-time assistant professor in the department of Biotechnology, and from 2016 to the present she is a chief assistant at the University "Prof. Dr. Asen Zlatarov" - Burgas.

2. General description of the submitted materials

The scientific research in the works of chief assistant Galina Yordanova are in the field of scientific direction 5.11 "Biotechnology", scientific specialty "Technology of biologically active substances (incl. enzymes, hormones, proteins), in which specialty the competition was announced.

The total number of points collected by the candidate for fulfilling the minimum national requirements according to the "Regulations on the conditions and procedure for acquiring scientific degrees and occupying academic positions at the University "Prof. Dr. Asen Zlatarov" - Burgas is 709.03 points with the required minimum of 600 points.

The candidate Galina Yordanova participated in the competition with 1 monograph from group B-indicator 3, seventh publications were presented under indicator G7 "Scientific publications that are referenced and indexed in world-renowned databases of scientific information (Scopus, Web of science)", and 21 publications were presented under indicator G8 "Scientific publications in non-refereed journals with scientific review or in edited collective volumes".

The SCOPUS database contains 8 publications by the candidate, of which 6 were cited with a total of 92 citations. Her H-factor according to SCOPUS is 5.

3. General characteristics of the candidate's activities

3.1. Educational and pedagogical activity (work with students and doctoral students)

Chief assistant Galina Yordanova, PhD demonstrates active pedagogical activity. She has academic and teaching experience within 18 years in the field of education - from 2006, when she was appointed as a part-time lecturer until now. She teaches 10 academic disciplines in the Bachelor's and Master's degree programs. She is a leading lecturer in academic disciplines related to microbiology, biotechnological production, biotechnology of pharmaceutical and agrobiological agents, technology of milk and dairy products, preservation, food legislation and food policy, etc.

She is a scientific supervisor of 10 graduates. She is a tutor for 1st and 4th year students in the specialties "Biotechnology" and "Food Biotechnology". She is the author of 8 new or updated curricula.

In conclusion, it can be summarized that the candidate is a lecturer with extensive experience in a wide range of disciplines in the field of biotechnology.

3.2. Administrative experience of the candidate

Chief assistant Yordanova has administrative experience in organizational and management structures, respectively:

- Member of the Faculty Council of the Faculty of Technical Sciences from 2022 - present.
- Member of the General Assembly of the Bulgarian Academy of Biotechnology;
- Member of the committee for conducting the State Examination for the Bachelor's Degree in Biotechnology, majors in "Biotechnology" and "Food Biotechnology".
- Member of the committee for conducting the Biology exam for the Master's Degree in Medicine.
- During the period 2017 - 2023, she was an academic mentor at the Department of Biotechnology under the Student Internships project - PHASE 1 and PHASE 2.

4. Scientific and scientific-applied activities. Contributions

The contributions of chief assistant Galina Dimitrova Yordanova, PhD have a scientific and scientifically applied nature and are grouped into the following four areas in the field of biotechnology and her scientific specialty "Technology of biologically active substances (incl. enzymes, hormones, proteins)":

4.1 Biodegradation of phenol and phenol derivatives with immobilized cells of microorganisms on various carriers.

Covalent immobilization of *trichosporon cutaneum* R57 cells was carried out on polyamide - PA and polyacrylonitrile - PAN membranes with glutaraldehyde as a binding agent - **G7-1**. Two immobilized systems of *Aspergillus awamori* NRRL3112 and *Trichosporon cutaneum* R57 on modified polyamide granules were also obtained **G7-3**. Covalent immobilization of *Aspergillus awamori* NRRL 3112 was carried out on a modified polyacrylonitrile membrane with glutaraldehyde as a binding agent. Two methods of immobilization were used - in the presence of phenol and without phenol **G7-2**.

4.2 Quality control and management in various food production and laboratories.

The calibration interval of the densitometer was calculated based on three main factors - load operation, stability of the technical means in the calibration interval and the uncertainty coefficient of additional technical means **G8-1**. An algorithm was developed to analyze the causes of a decline in production. The algorithm was applied to a company producing meat and meat products **G8-2**. A study was conducted to improve the methodology and increase the competitiveness of a beer production company. It consists of three modules based on the principles of TQM and an algorithm for eliminating discrepancies **G8-4**. In quality management in a testing microbiological laboratory, attention should be paid to the traceability of results, especially to the expanded uncertainties that arise during the analysis **G8-7**. A new solution for incoming control of raw material deliveries for a dairy company, linked to a decision-making module, has been studied to ensure 95% certainty of meeting the requirements of the delivery quality indicators **G8-20**.

The results of the simulation of the study of a reference material for *Escherichia coli* show that the new control chart in combination with the stepwise approximation method are suitable for predicting the limit values for the controllability of the measurement process **G8-21**.

4.3 Yeast – viability

It has been established that the quality of the yeast *Saccharomyces cerevisiae* is determined by many parameters, including their viability and yeast lifting force **G8-9**. A new study presents an automated image-based cytometric method for determining the total number and viability of yeast cells using a newly synthesized DNA fluorescent dye PO-TEDM-1 and a new Easycounter YC instrument **G7-4**. The quality of baker's yeast *Saccharomyces cerevisiae* is determined by many parameters, including their viability and resistance to freezing. Fresh yeast frozen at -20 °C and thawed at room temperature **D8-10** was studied.

4.4 Application of molds and yeasts to obtain valuable bioproducts.

An important task in the energy sector is the reduction of carbon dioxide emissions, both through the life cycle of non-food raw materials for biofuels and new strains of microorganisms, and through the global application of technologies for capturing major sources of greenhouse gas emissions **G8-11**. The possibilities for growing and developing two types of microorganisms *Aspergillus oryzae* and *Saccharomyces cerevisiae* on coffee grounds have been studied in order to utilize coffee waste **G8-12**. The fermentation of coffee grounds obtained from a vending machine in the presence of a strain of *Aspergillus oryzae* has also been studied and the thermodynamic parameters of Gibbs energy, entropy, enthalpy and activation energy under different conditions have been determined **G8-13**. It has been established that coffee grounds can

be successfully used as part of the growth medium of the species *Aspergillus oryzae* and even independently as a medium. No significant difference was observed between the enzyme activity on the two media types **G7-5**. Coffee grounds and the ability of *Aspergillus oryzae* to grow and absorb them as the sole carbon source, producing bioethanol **G7-6**, were studied. Cultivation of microalgae or cyanobacteria is a promising way to produce biomass, and hence a way to obtain biofuels **G8-16**. The production of citric acid by *Aspergillus niger* from coffee grounds from a vending machine in bulk and from espresso capsules **G7-7** was studied. The growth of selected bacteria, yeasts and fungi on coffee grounds obtained by brewing, from espresso coffee and from capsules **G8-19** was determined.

5. Personal impressions

I have known chief assistant Galina Yordanova for many years. My personal impressions are that she is attentive and responsive to her colleagues, responsible and always ready to help.

6. Conclusion:

Bearing in mind the above mentioned, I confidently propose to the respected Faculty Council of the Faculty of Technical Sciences to elect chief assistant Galina Dimitrova Yordanova, Ph.D as an "Associate Professor" in the field of higher education 5 "Technical Sciences", PN 5.11 "Biotechnologies", scientific specialty "Technology of biologically active substances (incl. enzymes, hormones, proteins)".

19.12.2024

Jury member:

/prof. I. Markovsk