WARSZAWSKI UNIWERSYTET MEDYCZNY

NARODOWE CENTRUM NAUKI

JOB OFFER – *Post-Doc*

The Medical University of Warsaw is seeking a candidate for the position of: Post-doc

Number of available positions: 1
Place of work: Microbiota Lab, Medical University of Warsaw
Type of recruitment: National Science Center SONATA BIS project

Project Title:
"Lavender flower as a source of postbiotic metabolites modulating functions of intestinal and blood-brain barrier."

Project Background:
The usage and popularity of herbal remedies have been growing all over the world in the last decades. Over 80% of the general population relies on medicinal plant materials or products containing them for some part of their healthcare. However, the scientific evidence concerning the clinical effectiveness, safety, or mechanism of action of plant extracts and raw plant materials is still lacking in many cases. Additionally, the research shows that 30 up to 60% of currently used drugs are compounds of natural origin or derived from natural products. This data indicate that the investigation of plant extracts and isolated natural products is a challenging field with the need for further development and extensive research.
Gut microbiota (GM) is a complicated and huge microbial community that plays a crucial role in maintaining the homeostasis of human organism. The tremendous development in the research focused on the associations of GM with health and

the pathogenesis of many diseases can be observed from the being of the XXIst century. In several studies, it was shown that the well-being of GM is an essential factor regulating central nervous system homeostasis, while its disturbances contribute to the development of many psychiatric disorders, including anxiety and depression. This interaction is defined in the literature as a gut-brain axis. On the other hand, many studies (included ones conducted by PI) proved that medicinal plant materials ingested either in the form of traditional preparations or as ingredients of commercially available drugs and food supplements can interact with the GM. The plant materials can affect the biodiversity of GM, and the GM can alter the structure of natural products contained in plant extracts leading to the production of novel bioactive metabolites.

In the context of anxiety development, progression, and treatment, significant attention has been recently paid to the condition and metabolic role of intestinal and blood-brain (BBB) barriers. In this aspect, the role of GM has also been often addressed. The breakdown in the integrity of both barriers may lead to the increased permeability of factors (i.e., bacterial lipopolysaccharides or peptidoglycans) and resulting in inflammatory response associated with anxiety and depression. Lavandula angustifolia Mill., also called true/English lavender, is a source of important medicinal plant material - lavender flower (Lavandulae flos). It is a source of essential oil rich in monoterpenoids but also the flowers are often used in the form of self-prepared infusions to treat mild symptoms of mood disorders, including different forms of anxiety. The infusion is usually freshly prepared and ingested 2-3 times a day. In previous reports, most of the attention was paid to the anxiolytic activity of volatile compounds contained in lavender flowers. However, the form of an infusion, which in fact is a boiling water extract, usually contains small amounts of essential oil and is rich in other more polar natural products, which can contribute to the beneficial effects in vivo. Whenever the oral intake is considered, the interaction with GM of the plant remedy must be addressed. The available literature lacks any information supported by basic studies on the interactions of lavender infusion (LOI) with GM and intestinal barrier. The area of metabolism of compounds contained in LOI by GM, their bioavailability, and integrations with BBB is also not clear. On the other hand, the efficacy of herbal tea prepared from lavender flowers or raw material was confirmed clinically, with no information on the potential mechanism of action or compounds responsible for the observed effects as well as their pharmacokinetics.

The current proposal aims to provide scientific evidence on the interaction of LOI with GM in the context of the treatment and prevention of anxiety disorders in humans. The planned experiments will address the role of LOI and its postbiotic metabolites produced in the gut in the maintenance of intestinal and blood brain barriers.

We are looking for a highly motivated person to participate as a post-doc within scientific project at the Warsaw Medical University at the Faculty of Pharmacy.

The candidate will participate in the following research tasks:

1. Performing experiments involving the chemical analysis of plant extract used for bioassays.
2. Analysis of metabolites products by gut microbiota.
3. Evaluation of the bioactivity of raw extract and metabolites mixtures used cell models including Caco-2, HBMEC, and BV2.
4. Analysis of results obtained from NGS sequencing of gut microbiota treated with lavender extract.
5. Analysis of the chemical composition of samples after incubation with microbiota using bioinformatics tools.

Supervisor: prof. dr hab. Sebastian Granica
Type of employment relationship: Full-time employment
Employing entity: Warsaw Medical University
Application deadline: September 15th, 2026
Expected start date: October 1st, 2026
Duration: 23-month position
The position is offered for a maximum period of 23 months with an initial probation period of 6 months.
Salary: 17 500 PLN (tax included) (gross plus employer's fees)

Eligibility:
A suitable applicant should have the following qualifications:

1. Experience in chemical analysis including chromatographic methods.
2. Basic experience in cell cultures.
3. Experience in experiments involving microbiota would be an additional

advantage.

4. Ph.D. degree in chemistry, biology, pharmacy, or similar discipline is required.
5. Knowledge of English at the B2 level.
6. Knowledge of bioinformatics methods will be an additional advantage.

How to apply:

Please send:

1. Letter of interest
2. CV
3. Publication list
4. Photo

Contact details of 1-2 potential referees with recommendation letter to: sebastian.granica@wum.edu.pl

All documents should be sent as PDF files.

The e-mail heading should be: „**Post-doc – SONATA BIS grant**".

Please provide also the statement that you grant us a permission to process your personal details for the recruitment process:

"I hereby give consent for my personal data included in the job offer to be processed for the purposes of recruitment conducted by the Medical University of Warsaw located in Warsaw".

The rules for the protection of personal data used by the Medical University of Warsaw:

1. The administrator of personal data is the Medical University of Warsaw located in Warsaw, Żwirki i Wigury 61, 02-091 Warszawa,
2. Contact to the Data Protection Officer - email address: iod@wum.edu.pl.
3. Personal data will be processed in order to implement the recruitment process pursuant to art. 221 of the Labor Code, and in the case of providing a broader scope of data pursuant to art. 6 § 1a GDPR - consent expressed by the candidate.
4. Access to personal data within the University's organizational structure shall only have employees authorized by the Administrator in the necessary

scope.

5. Personal data will not be disclosed to other entities, except for entities authorized by law.
6. Personal data will be stored for the period necessary to carry out the recruitment process, up to 12 months from the settlement of the recruitment process. After this period, they will be removed.
7. You have the right to access your data, the right to rectify, delete, limit processing, the right to transfer data, the right to object to the processing, the right to withdraw consent.
8. You have the right to withdraw consent to the processing of your personal data at any time, which will not affect the lawfulness of the processing that was carried out on the basis of consent before its withdrawal.
9. You have the right to lodge a complaint with the Office for Personal Data Protection when it is justified that his personal data are processed by the Administrator in breach of the general regulation on the protection of personal data of April 27, 2016.
10. Providing personal data is voluntary, but necessary to participate in the recruitment process to the extent specified in art. 221 § 1 of the Labor Code, voluntary in the remaining scope.
11. Decisions will not be taken in an automated manner and personal data will not be subject to profiling.

Project "**Lavender flower as a source of postbiotic metabolites modulating functions of intestinal and blood-brain barrier"** is funded by the National Science Centre under the SONATA BIS-13 scheme.

NATIONAL SCIENCE CENTRE
POLAND
