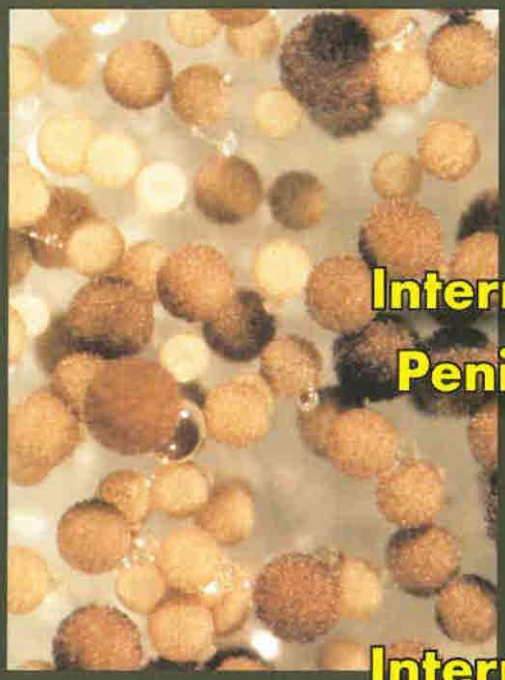
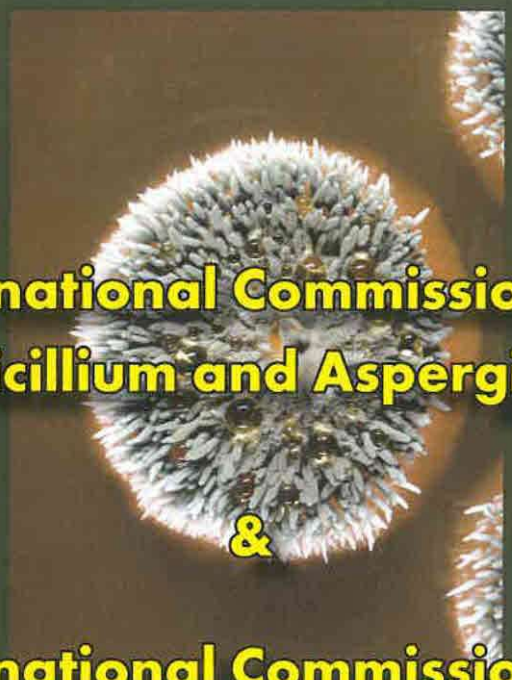
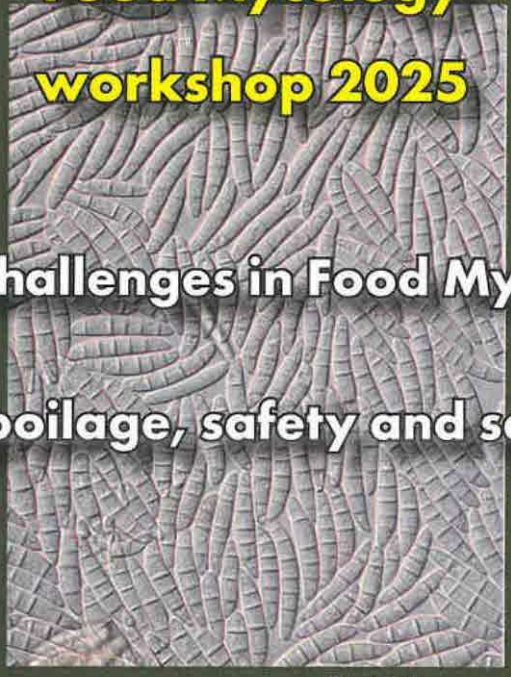




International Commission on Penicillium and Aspergillus

&

International Commission on Food Mycology

workshop 2025


Future challenges in Food Mycology –

food spoilage, safety and security

Programme and Abstracts



Utrecht, The Netherlands, 7-9 July 2025

International Commission on Food Mycology

&

International Commission on Penicillium and Aspergillus

workshop 2025

Future challenges in Food Mycology food spoilage, safety and security

Programme and Abstracts

Utrecht, The Netherlands, 7–9 July 2025

INTERNATIONAL COMMISSION ON FOOD MYCOLOGY

The commission is a COMCOF (Commissions, Committees and Federations) of the International Union of Microbiological Societies (IUMS) and established in 1990.

The aims of the Commission are:

- to improve and standardise methods for isolation, enumeration and identification of fungi in foods;
- to promote studies of the mycological ecology of foods and commodities;
- to interact with regulatory bodies, both national and international, concerning standards for mycological quality in foods and commodities;
- to support regional initiatives in this area. The Commission further aims to extend understanding of the principles and methodology of food mycology in the scientific community by publishing its findings, and by sponsoring meetings, specialist workshops, courses and sessions dealing with aspects of its work.

The first workshop on Methods for Mycological Examination of Food was organised in Boston, USA, in July 1984. After this successful meeting subsequent meetings were held in Baarn (1990), in Copenhagen (1994) near Uppsala (1998), Samsøe (2003), Key West (2007), Freising (2010, 2013, 2016 and 2019) and in Utrecht (2022).

Venue: Westerdijk Fungal Biodiversity Institute, Uppsalalaan 8, 3584CT Utrecht, The Netherlands

The eleventh International ICPA/ICFM workshop is organized by **Jos Houbraken** and **Rob Samson**

Sponsors

BCN Research Laboratories INC

IUMS The Global Voice of Microbiology

PROGRAMME ICPA/ICFM 2025

Sunday 6 July 2025

18.30 Get together at Hotel Biltsche Hoek, de Bilt, the Netherlands

Monday 7 July 2025
Westerdijk Fungal Biodiversity Institute, Utrecht

08.30 – 09.30 Registration

09.30 Welcome; Jos Houbraken & Rob Samson

09.45 Rob Samson Westerdijk Fungal Biodiversity Institute, the Netherlands

The International Commission on Food mycology (ICFM). Past, present and future.

Session 1: Food Spoilage Reduction – Preservatives. Chair Emilia Rico.

10.05 **Jan Dijksterhuis**, Westerdijk Fungal Biodiversity Institute, the Netherlands
Rethinking used and novel strategies to prevent food spoilage.
10.25 **Frank Segers**, Corbion, the Netherlands
The combined impact of organic acids and modified atmosphere on fungi resistant to modified atmosphere packaging.
10.45 **Mélanie Cadoret**, Univ Brest, France
Impact of UV and/or biocides on the inactivation of *Aspergillus brasiliensis* ATCC 16404.

11.05 Break

11.35 **Alex Grum-Grzhimaylo**, Westerdijk Fungal Biodiversity Institute, the Netherlands
Genetic basis and evolution of resistance to the polyene preservative natamycin.
11.55 **Petter Melin**, RISE Research Institutes of Sweden, Sweden
Practical use of weak acid preservatives in meat-analogues and other products.
12.15 **Roya Choupannejad**, Westerdijk Fungal Biodiversity Institute, the Netherlands
Natural antimicrobials for enhanced food bio-preservation.
12.35 **Siavash Atashgahi**, AB Mauri, the Netherlands
Natural preservation of bakery products.

13.00 Lunch

Session 2: Mycotoxin Contamination and Exposure Risk in Food. Chair Paul Dyer.

13.50 **Ana-Rosa Ballester**, Institute of Agrochemistry and Food Technology, Spain
Deciphering ochratoxin A biosynthesis and degradation in *Aspergillus niger*: functional insights from halogenase and ochratoxinase mutants.
14.10 **Andika Sidar**, Gadjah Mada University, Indonesia
Mycotoxins on Indonesian agricultural commodities: Challenges and mitigation approaches.
14.30 **Angel Medina-Vaya**, Cranfield University, UK
Towards climate change resilient biocontrol to avoid OTA contamination in Robusta coffee production.
14.50 **Monika Coton**, Univ Brest, France
How to evaluate mycotoxin exposure due to mouldy foods at the consumer level. A case study on *Alternaria* mycotoxins in tomatoes.

15.10 **Break**

15.30 **Myrsini Kakagianni**, Department of Food Science and Nutrition, School of Agriculture Sciences, University of Thessaly, 43100, Karditsa, Greece – [online]
Probabilistic assessment of deoxynivalenol (DON) exposure from pita bread consumption: A Greek population study.

15.50 **Paula Cristina Azevedo Rodrigues**, Instituto Politécnico de Braganca, Portugal
Toxigenic fungi from Mozambican maize, peanuts and rice: what is the associated risk?
16.10 **Sylvia Kalli**, Wageningen University & Research, the Netherlands
Expanding the mycotoxin horizon: Analytical approaches for fungal metabolites in lupins and forage grasses.
16.30 **Sofia Noemi Chulze**, CONICET-UNRC, Argentina
An increasing risk driven by climate change: Aflatoxins and the urgent need for biocontrol.

16.50 Posters

18.00 Dinner at Biltsche Hoek Hotel

Tuesday 8 July 2025

Session 3: Food Spoilage Reduction – Biocontrol and Processing. Chair Monika Coton

09.00 **Maodo Malick Cissé**, Cheikh Ahmadoul University of Touba, Senegal [online]
Evaluation of the antagonistic activity of indigenous *Trichoderma* species against *Colletotrichum gloeosporioides*, the fungal pathogen causing mango anthracnose in Senegal.
09.20 **Emilia Rico**, BCN Research Laboratories, USA
Heat-resistant moulds (HRM) spoilage of thermal-processed beverages: has anything changed in the last 35 years?
09.40 **Muhammad Ahmed Ihsan**, University of Malta, Malta
Antifungal properties of lactic acid bacteria isolated from Maltese sheep milk and cheese.
10.00 **Alicia Rodríguez**, University of Extremadura, Spain
Discovering the effect of two antagonistic yeasts on metabolites involved in aflatoxin biosynthesis of *Aspergillus flavus* in a dried fig-based medium

10.20 Break

11.00 **Diana Sousa**, CEB - Centre of Biological Engineering, University of Minho, Braga, Portugal [online]
Comparative heat activation and inactivation of *Talaromyces trachyspermus* ascospores inside and outside ascocarps.
11.20 **Miloslava Kavková**, Dairy Research Institute Ltd., Czech Republic
The antifungal activity of lactobacilli against spoilage fungi in milk, bakery and vegetable matrices.

Session 4: Fungi for Alternative Proteins and Food Fermentation. Chair Sofia Chulze.

11.40 **Alex James Pate**, University of Nottingham, UK
Meddling with mycoprotein - novel strain development of *Fusarium venenatum*.
12.00 **Eleni Kollia**, National and Kapodistrian University of Athens, Greece
Mycological fermentation of plant-based substrates for blue cheese analogue production.
12.20 **Asaph Kuria**, University of Nottingham, UK
Unravelling the enzymatic dynamics of mould-ripened Camembert and Brie cheese.
12.40 **Emmanuel Coton**, Univ Brest, France
Metabolite profile variability in *Penicillium roqueforti* populations: a footprint of ecological niche specialisation and domestication.

13.00 Lunch

Session 5: Ecological Insights into Fungal Communities and Mycotoxin Formation in Food. Chair Vasilis Valdramidis.

13.50 **Maria Laura Ramirez**, Instituto de Investigación en Micología y Micotoxicología, Argentina [online]
Aspergillus section *Nigri* and ochratoxin A accumulation in raisins: A comparative study of drying systems.
14.10 **Andrea Patriarca**, Cranfield University, UK
Ecophysiology of *Alternaria* strains from tomato producing AAL toxins.

14.30 **Marta Taniwaki**, Food Technology Institute (ITAL), Brazil.
Beyond the flavor: Assessing the risks and rewards of Brazilian artisanal cheese.
14.50 **Júlia Marquès**, Veterinary Faculty, Universitat Autònoma de Barcelona, Spain
Competitiveness study among black aspergilli strains.

15.10 Break

15.40 **Mahshid Saedi**, Westerdijk Fungal Biodiversity Institute, the Netherlands
Exploring the mycobiota and mycotoxin contamination in traditional Iranian foods.
16.00 **Marie Belair**, Univ Brest, France
Ecological niche shapes fungal communities from vine to wine and impacts FMA detection in wine.
16.20 **Su-lin Hedén (Leong)**, Swedish University of Agricultural Sciences, Sweden
Mycotoxin production by Penicillium species during refrigerated storage of plant-based analogues of cheese, fraiche and pâté.

17.00 ICFM commission board meeting (only for ICFM committee members)

Dinner at Stadskasteel Oudaen restaurant Utrecht centre (Oudegracht 99, 3511 AE Utrecht)

Wednesday 9 July 2025

Session 6: Guidelines and New Insights in the Identification of Mycotoxigenic Fungi. Chair Su-lin Hedén (Leong).

09.00 **Nazik Hussain**, Institute of Plant Sciences University of Sindh Jamshoro, Pakistan [online]
Morphological and molecular characterisation of *Alternaria alternata* from tomato Lycopersicon esculentum fruit
09.20 **Jens Christian Frisvad**, DTU - Bioengineering, Denmark
Chemistry and morphology are excellent for separating *Aspergillus oryzae* and *Aspergillus flavus*, but difficult to achieve using genome sequencing.
09.40 **Jos Houbraken**, Westerdijk Fungal Biodiversity Institute, the Netherlands
An update on *Aspergillus, Penicillium* and *Talaromyces* taxonomy.
10.00 **Ya Bin Zhou**, Westerdijk Fungal Biodiversity Institute, the Netherlands
Barcoding *Aspergillus, Penicillium* and *Talaromyces* strains from the CBS biobank.
10.20 **Ioanna Pyrri**, National and Kapodistrian University of Athens, Greece
Penicillium section *Brevicompacta*: new insights in taxonomy.

10.40 Break

Session 7: Methodology Development. Chair Angel Medina Vaya.

11.10 **Laura García Calvo**, Nofima AS, Norway
Whole Genome Sequencing of *Penicillium* spoilage mould from food producers.
11.30 **Kaitlyn Parra**, Veterinary Faculty, Universitat Autònoma de Barcelona, Spain
Development of a droplet digital PCR assay for population study of ochratoxigenic and non-ochratoxigenic *Aspergillus carbonarius* strains.
11.50 **Manuela Zadravec**, Croatian Veterinary Institute, Croatia
Challenges in sample preparation of *Alternaria, Cladosporium* and *Fusarium* species for MALDI TOF analyses.
12.10 **María A. Pavicich**, Ghent University, Belgium
Hyperspectral imaging for early fungal detection and prediction of mycotoxins in apples.

12.30 Closing of the workshop

13.00 Lunch

POSTERS

Alberto Martín, University of Extremadura, Spain
Study of *Alternaria alternata* on tomato agar by VOCs, mycotoxin and metabolomic analysis.

Bruna Sepúlveda, University of Minho, Braga, Portugal [online]
Isolation of filamentous fungi from beans, maize and peanuts from Cuanza Sul, Angola.

Dana Tančinová, Slovak University of Agriculture in Nitra, Slovakia
Ability of selected plant essential oils to inhibit cyclopiazonic acid production by *Penicillium commune* strains.

Elettra Berni, Stazione Sperimentale per l'Industria delle Conserve Alimentari-Fondazione di Ricerca – SSICA, Italy
Influence of reduced water activity on *Monascus ruber* heat- and sorbate-resistance.

Frank Segers, Corbion, the Netherlands
Predictive modeling for bread spoilage prevention: simplifying complex data.

Inês Mendonça, National Institute for Agrarian and Veterinary Research, Portugal [online]
Effectiveness of encapsulated lemon thyme and prince herb essential oils against *Stemphylium vesicarium* and *Alternaria* spp. isolated from Portuguese "Rocha" pear orchards.

Linda Mezule, Riga Technical University, Latvia
Enzymes from wood-decaying fungi as tools for waste hydrolysis.

Santiago Ruiz-Moyano, Universidad de Extremadura, Spain
Optimization of a HPLC-fluorescence method for quantification of fumonisins FB1 and FB2 in food matrices and synthetic culture media.

Simas Borkertas, Lithuanian Research Centre for Agriculture and Forestry, Lithuania
Fungal strains of industrial food by-products fermentation and its techniques for mycelium and food production.

Teresa Vale Dias, University of Minho, Braga, Portugal [online]
Fungal ecology along the production line of Portuguese goat cheese.

Zuzana **Barboráková**, Slovak University of Agriculture in Nitra, Slovakia
Ochratoxin A producers in green coffee beans.

ABSTRACT POSTERS

STUDY OF *ALTERNARIA ALTERNATA* ON TOMATO AGAR BY VOCS, MYCOTOXIN AND METABOLOMIC ANALYSIS

Ana Martínez[1], Guillem Campmajó[2], Raquel Torrijos[2,3], Paula Tejero[1], Alberto Martín*[1], Alejandro Hernández[1], María de Guía Córdoba[1], Alicia Rodríguez[1] y Chiara Dall'Asta[2]

[1]Nutrition and Bromatology, University Institute of Agricultural Resources (INURA), School of Agricultural Engineering, University of Extremadura, Spain.[2]Department of Food and Drug, University of Parma, Italy. [3]Laboratory of Food Chemistry and Toxicology, Faculty of Pharmacy, University of Valencia, Spain.

Presenter: Alberto Martín

Alternaria alternata is a phytopathogenic mould that primarily affects tomato crops, producing the disease known as black mould. It is a highly ubiquitous species capable of producing mycotoxins, including alternariol (AOH), altenuene (ALT), alternariol methyl ether (AME), altertoxin-I (ATX-I), and tenuazonic acid (TA). The presence of these hazardous compounds in tomatoes results in economic losses and a risk to consumer health, making it necessary to search for a control method. This study examined the volatile organic compounds (VOCs) and mycotoxins that *A. alternata* produced during its growth. For this, a tomato agar culture medium was prepared, simulating the food matrix. The mould was inoculated at a concentration of 10 CFU/mL and incubated at 25ºC. Sampling was carried out at days 0, 3, 4, 5, and 7. The VOCs were analysed using a prior extraction with HS-SPME before quantification and identification through a gas chromatograph coupled to a mass detector (GC/MS). On the other hand, the determination of mycotoxins was performed using triple quadrupole (LC-QqQ) . In addition, a metabolomic analysis was performed using LC-TWIMS-HRMS using the Acquity I-Class UPLC coupled to a Vion IMS QTOF. Results showed that a total of 36 VOCs were obtained, with differences found between the non-inoculated tomato agar and the batches inoculated with *A. alternata*. Regarding the mycotoxins, the largest quantities of AOH, AME, ALT and ATX-I were found on the 7th day of sampling. Finally, the metabolomic analysis shows a variability of the compounds throughout the different incubation times, showing a similar trend to those obtained using LC-QqQ. These findings may contribute to the scientific foundation for the early identification of *A. alternata* in tomatoes, hence preventing the development of mycotoxins.

Acknowledgements

This work was supported by the project RTI2018-096882-B-100 funded by the Spanish Ministry of Science and Innovation and the AEI (MCIN/AEI/10.13039/501100011033) and the European Regional Development Fund (ERDF) "A way of making Europe". In addition, this study was also supported by the Junta de Extremadura and FEDER (grant number GR21180). The first author gratefully acknowledges grant FPU20/01769 funded by MCIN/AEI/10.13039/501100011033 for this study. This study has also been made possible thanks to the funding by the project EU GREEN, European University alliance for sustainability: responsible Growth, inclusive Education and Environment (Project ID: 101089896). "Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Union or European Education and Culture Executive Agency (EACEA). Neither the European Union nor the granting authority can be held responsible for them."

ISOLATION OF FILAMENTOUS FUNGI FROM BEANS, MAIZE AND PEANUTS FROM CUANZA SUL, ANGOLA

Bruna Sepúlveda[1*], Teresa Vale Dias[1,2,3], Lafayete Maco[4], Zelda Lucamba[4], Sandra Afonso[4,5], Paula Rodrigues[3], Armando Venâncio[1,2]

[1]CEB - Centre of Biological Engineering, University of Minho, 4710-057 Braga, Portugal; [2]LABBELS – Associate Laboratory, Braga/Guimarães, Portugal; [3]CIMO, LA SusTEC, Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal; [4]ISPCS- Instituto Supeior Politécnico de Cuanza Sul, Angola;[5]CNIC- Centro Nacional de Investigação Científica, Luanda, Angola

Presenter: Bruna Sepúlveda

Mycotoxins are toxic secondary metabolites produced by certain filamentous fungi, posing serious health risks to humans and animals through contaminated food products. This study aimed to isolate and identify fungi and detect mycotoxins from beans, maize, and peanuts in Cuanza Sul, Angola. Ten samples of each commodity were collected in 2023, and twenty-five kernels from each sample were surface-disinfected and plated on Dichloran Rose-Bengal Chloramphenicol (DRBC) medium. Fungal colonies were isolated after 5 to 7 days at 25 ºC. DNA

extraction was carried out to proceed with molecular identification through sequencing of the ITS region.

Preliminary results revealed diverse fungal communities across all food commodities, including presumptive species from the *Aspergillus* and *Penicillium* genera—both commonly associated with mycotoxin production (Greeff-Laubscher et. al., 2019). Fungal contamination was observed in 75.2% of maize kernels (188/250), 64.4% of peanut kernels (161/250), and 36.4% of bean kernels (91/250), based on the subsamples where counts were completed. A total of 97 fungal isolates were obtained from maize, 162 from peanuts, and 81 from beans. These isolates are currently being preserved and prepared for molecular identification and future assessment of their toxigenic potential.

These findings highlight a high incidence of fungal contamination in staple foods from Cuanza do Sul, contributing to a better understanding of food safety challenges in Angola and other tropical regions.

Acknowledgement: Bruna Sepúlvela was supported by the Portuguese Foundation for Science and Technology(FCT) under the scope of the strategic funding of UIDB/04469/2020 unit, and by LABBELS – Associate Laboratory in Biotechnology, Bioengineering and Microelectromechanical Systems, LA/P/0029/2020.

Reference:

Greeff-Laubscher, M. R., Beukes, I., Marais, G. J., & Jacobs, K. (2019). Mycotoxin production by three different toxigenic fungi genera on formulated abalone feed and the effect of an aquatic environment on fumonisins. Mycology, 11(2), 105–117. https://doi.org/10.1080/21501203.2019.1604575

Ability of selected plant essential oils to inhibit cyclopiazonic acid production by *Penicillium commune* strains

Dana Tančinová[1*], Zuzana Barboráková[1], Zuzana Mašková[1], Monika Mrvová[1] Denisa Mihňáková[2]

[1]Institute of Biotechnology, Faculty of Biotechnology and Food Sciences, Slovak University of Agriculture in Nitra, Slovakia
[2]State Veterinary and Food Administration of the Slovak Republic, Bratislava, Slovakia

Presenter: Dana Tančinová

Essential oils are natural substances with potential antimicrobial properties, and some also have the ability to suppress mycotoxin production. Penicillium commune is frequently involved in cheese spoilage. The aim of this research was to test the ability of selected essential oils to affect the production of cyclopianozonic acid (CPA) by P. commune strains. The tested strains (6) of P. commune were isolated from mouldy cheeses. The effect of selected plant essential oils on the growth of individual P. commune strains under in vitro conditions was tested by gaseous diffusion. Czapek yeast agar (CYA) was used for analysis in three 90 mm diameter two-section Petri dishes. The test strains were single-point inoculated into each Petri dish section. A 60 mm filter paper was placed in the center of the Petri dish lid. Then, 50 µl (625 µl.l-1 air) of a specific plant essential oil onto was pipetted onto the filter paper. For the control samples, 50 µl of distilled water was applied to the filter paper instead of essential oil. All analyses were performed in triplicate. The Petri dishes were carefully sealed with parafilm and incubated for 14 days in the dark, in a thermostat at 25 ± 1 °C. After 14 days of cultivation, three 1 x 1 cm squares were cut out of each Petri dish using a lancet, including the grown colony and the corresponding culture medium (six replicates). The excised sections were placed in 1.5 ml microtubes. Subsequently, 500 µl of extraction reagent (chloroform:methanol, 2:1 ratio) was added, and the tubes were mixed in Vortex for two minutes. After mixing, 30 - 50 µl of the liquid phase was removed and applied to a chromatography plate along with the CPA standard. The plate was placed in a developing system consisting of toluene, ethyl acetate and formic acid in a 5:3:1 ratio. After the development was completed, CPA was visualized on the chromatographic plate in daylight after applying Ehrlich reagent and heating the chromatographic plate to 130 °C for about 8 minutes, appearing as a purple spot with a tail. According to the inhibitory effect on CPA production by P. commune strains, the tested essential oils were ranked as follows: Eucalyptus globulus (100 %) = Melaleuca quinquenervia (100 %) = Ocimum basilicum (100 %) = Salvia officinalis (100 %) Mentha citrata (77.78 %) Rosmarinus officinalis (66.67 %) Cajeput aetheroleum (38.89 %) Pimpinella anisum (16.67 %) Laurus nobilis (13.89 %) Foeniculum vulgare (8.33 %).

Acknowledgements: This research was carried out with the financial support of the project KEGA 030SPU-4/2024.