



Trends in Natural Products Research: A PSE Young Scientists' Meeting

May 23-26, 2022 - Kolymbari, Crete, Greece

CERTIFICATE OF ATTENDANCE

This is to certify that

Immacolata FARAONE

has participated in the

Trends in Natural Products Research:

A PSE Young Scientists' Meeting (PSE-YSM2022)

that took place between May 23rd and May 26th, 2022 at the Orthodox Academy of
Crete in Kolymbari, Crete, Greece

On behalf of the Organizing Committee

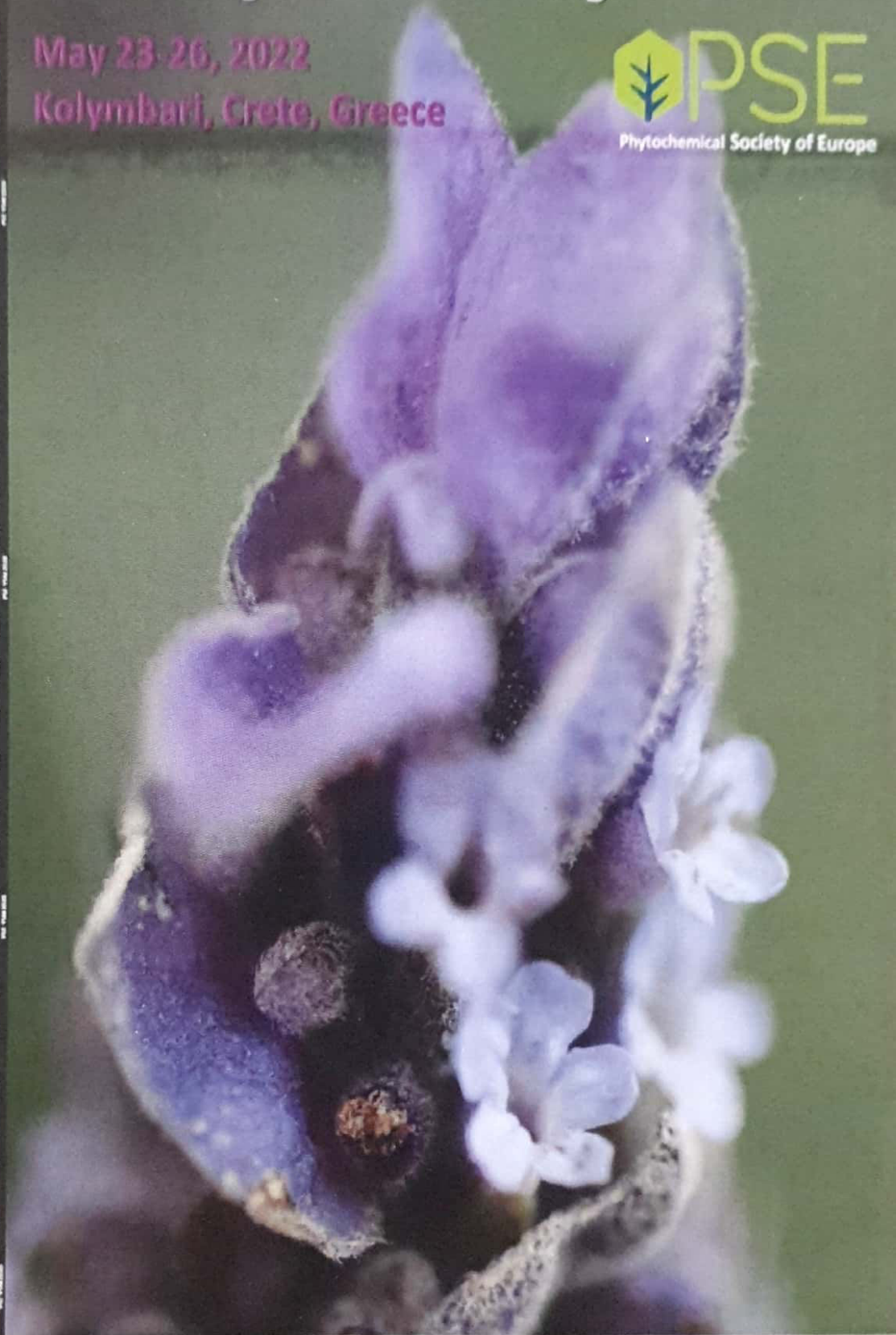
Assoc. Prof. Efstathia IOANNOU

Prof. Vassilios ROUSSIS

Trends in Natural Products Research: A PSE Young Scientists Meeting

May 23-26, 2022
Kolymbari, Crete, Greece

 **PSE**
Phytochemical Society of Europe



Chair of the Conference
Efstathia IOANNOU

Co-Chair of the Conference
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May 23-26, 2022
Kolymbari – Crete, Greece

Edited by
Efstathia Ioannou and Vassilios Roussis

SCIENTIFIC PROGRAM

Monday, May 23, 2022

Arrival of participants

13:00-15:00

Registration of participants

15:00-15:30

Opening Remarks

15:30-17:00

Session I

Chairman: Francisco A. MACÍAS (University of Cádiz, Spain)

15:30-16:00

IL1: Franz BUCAR (University of Graz, Austria)

Phytochemistry and antibacterial potential of *Lavandula* sp. preparations

16:00-16:15

OP1: Milan MALANÍK (Masaryk University, Czech Republic)

Comparison of phytochemical profile of different parts of *Ficus* species

16:15-16:30

OP2: Bastien PETIT (Université de Bourgogne Franche-Comté, France)

Saponins from “forgotten plants” of the soapberry family (Sapindaceae)

16:30-16:45

OP3: Karolina BARCAUSKAITE (Lithuanian Research Centre for Agriculture and Forestry, Lithuania)

Industrial hemp growing potential in Nemoral climate zone and their phytochemical composition

16:45-17:00

OP4: Nazia NAZAR (De Montfort University, UK)

Naturally occurring toxic compounds in medicinal and aromatic plants – examples from the Lamiaceae

17:00-17:30

Coffee/Tea Break

17:30-19:00

Session II

Chairman: Krystyna SKALICKA-WOŹNIAK (Medical University of Lublin, Poland)

17:30-18:00

IL2: Christos TSATSANIS (University of Crete, Greece)

Diet supplementation with the brown alga *Dictyopterus membranacea* restores glucose tolerance and modulates

- 18:00-18:15 intestinal microbiome of obese mice
OP5: Elise CROSSAY (Université de Toulouse, France)
Isolation of daphnane-type diterpenes from the latex of
Hura crepitans L. and activity against human colorectal
cancer cells Caco-2
- 18:15-18:30 **OP6: Mwafaq IBDAH** (Newe Yaar Research Center, Israel)
Biosynthesis of elemicin and isoelemicin in *Daucus carota*
leaves
- 18:30-18:45 **OP7: Joana SILVA** (Polytechnic of Leiria, Portugal)
Adding value to the seaweed *Codium* sp.: a sustainable
source of innovative dermatological ingredients
- 18:45-19:00 **OP8: Sotiris ORFANIDIS** (Fisheries Research Institute,
Greece)
Ecophysiological responses of two fucalean seaweeds to key
environmental factors to support biotechnological
applications
- 19:00-20:30 *Welcome Reception*
- 20:30- *Dinner*

Tuesday, May 24, 2022

- 09:00-11:00 **Session III**
Chairman: Jianbo XIAO (Universidade de Vigo, Spain)
- 09:00-09:30 **IL3: Krystyna SKALICKA-WOŹNIAK** (Medical University of
Lublin, Poland)
Investigations into the bioactivities of coumarins – from
brains to parasites
- 09:30-09:45 **OP9: Anne-Sophie PAGUET** (BioEcoAgro, France)
Multivariate analysis to investigate the diversity of wild
hops *Humulus lupulus* L. collected *in situ* in the north of
France
- 09:45-10:00 **OP10: Aristeidis TSAGKARIS** (University of Chemistry and
Technology Prague, Czech Republic)
Selected Asteraceae plant extract anti-lipase activity and
chemical composition identification through high resolution
mass spectrometry
- 10:00-10:15 **OP11: Lenka MOLČANOVÁ** (Masaryk University, Czech

- Republic)
Paulownia tomentosa Steud. as a source of geranylated flavonoids with interesting biological activities
- 10:15-10:30 **OP12: Lamprini MALEA** (Fisheries Research Institute, Greece)
The effects of abiotic factors on the physiological performance of the economically important red alga *Chondracanthus teedei*
- 10:30-11:00 **OP13: Angelo FONTANA** (Institute of Biomolecular Chemistry, National Research Council & University of Naples "Federico II", Italy)
The preclinical development of a boring molecule
- 11:00-11:30 *Coffee/Tea Break*
- 11:30-13:30 **Session IV**
Chairman: Franz BUCAR (University of Graz, Austria)
- 11:30-12:15 **IL4: Simon GIBBONS** (Birmingham, UK) – recipient of PSE Medal
Phytochemistry: not just for drugs and busting bugs
- 12:15-12:30 **OP14: Aurélie URBAIN** (University of Strasbourg, France)
Screening for antibacterial activity of French mushrooms against pathogenic and multidrug resistant bacteria
- 12:30-12:45 **OP15: Sylvia KALLI** (Wageningen University & Research, The Netherlands)
Prenylated (iso)flavonoids from legumes as novel, powerful antimicrobials
- 12:45-13:00 **OP16: Francesca GUZZO** (University of Campania "Luigi Vanvitelli", Italy)
Bio-guided isolation of antibacterial compounds from *Myrcianthes cisplatensis*
- 13:00-13:15 **OP17: Patrícia SUSANO** (Polytechnic of Leiria, Portugal)
Sulfated polysaccharides isolated from seaweeds collected off Portugal and Brazil coastlines: effects against microorganisms related to skin disorders
- 13:15-13:30 **OP18: Dimitris BEIS** (Biomedical Research Foundation Academy of Athens, Greece)
Identification of novel bioactive natural compounds using *in vivo* zebrafish phenotypic assays

13:30-15:00	<i>Lunch</i>
15:00-16:30	Session V Chairman: Olivier P. THOMAS (National University of Ireland Galway, Ireland)
15:00-15:30	IL5: Miroslav KVASNICA (Czech Academy of Science & Palacký University, Czech Republic) Brassinosteroids and related compounds: a story outside the plant kingdom
15:30-15:45	OP19: Natale BADALAMENTI (University of Palermo, Italy) Cytotoxic activity of new <i>ent</i> -kaurane derivatives of atractyligenin – Synthesis of a novel diterpenic skeleton by chemical rearrangement
15:45-16:00	OP20: Alessandro SANTARSIERE (University of Basilicata, Italy) A new total synthesis of myricanol: the influence of an ene-yne system
16:00-16:15	OP21: Marcello MERCOGLIANO (University of Naples "Federico II", Italy) Synthesis of BODIPY-based fluorescent analog of the molecular adjuvants sulfavants
16:15-16:30	OP22: Capucine JOURDAIN DE MUIZON (Université Paris-Saclay, France) Isolation, total synthesis, and osteogenic activity of new imidazole and glycerol derivatives isolated from the calcarean sponge <i>Pericharax heteroraphis</i>
16:30-18:00	Poster Presentations – Session A (poster presentations with even numbers) with light refreshments
18:00-20:00	Session VI Chairman: Christos TSATSANIS (University of Crete, Greece)
18:00-18:30	IL6: Sotirios C. KAMPRANIS (University of Copenhagen, Denmark) Synthetic biology drives the green transition
18:30-18:45	OP23: Martin HUDEČEK (Czech Academy of Science & Palacký University, Czech Republic) Compartmentalization of cytokinin metabolism in <i>Arabidopsis thaliana</i> and subcellular transport of cytokinins
18:45-19:00	OP24: Athina GAVRIILIDOU (University of Tübingen,

	Germany) A global survey of specialized metabolic diversity encoded in bacterial genomes
19:00-19:15	OP25: Giuseppina CHIANESE (University of Naples Federico II, Italy) Metabolomic exploration of the phytocannabinoids chemical space from fiber hemp (<i>Cannabis sativa</i> L.)
19:15-19:30	OP26: Katharina VOLLHEYDE (University of Copenhagen, Denmark) Generation of low-nicotine <i>Nicotiana benthamiana</i> plants via CRISPR/Cas9-mediated mutagenesis of berberine bridge enzyme-like (BBL) enzymes
19:30-19:45	OP27: Agata KRÓL (Medical University of Gdańsk, Poland) <i>Salvia apiana</i> <i>in vitro</i> shoot system as a source of volatile fraction with acetylcholinesterase inhibitory potential
19:45-20:00	OP28: Anita AMENT (Czech Academy of Science & Palacký University, Czech Republic) Functional study of GH3-mediated hormone homeostasis in plants
20:30-	<i>Dinner</i>

Wednesday, May 25, 2022

09:00-11:00	Session VII Chairman: Randolph ARROO (De Montfort University, UK)
09:00-09:30	IL7: Jianbo XIAO (Universidade de Vigo, Spain) The stability of natural polyphenols
09:30-09:45	OP29: Sirine ATWI-GHADDAR (Institute of Organic and Analytical Chemistry, France) Supercritical Fluid Eco-Extraction (SFEE) of plants: expanding the boundaries of polarity
09:45-10:00	OP30: Francesca MASI (University of Naples Federico II, Italy) Phytochemical profile of Centevita [®] , a <i>Centella asiatica</i> leaves extract
10:00-10:15	OP31: Hussain Shakeel BUTT (University of Oslo, Norway) Structural elucidation of bioactive polysaccharides from <i>Daphne mezereum</i>

- 10:15-10:30 **OP32: Giuliana D'IPPOLITO** (Institute of Biomolecular Chemistry, National Research Council, Italy)
Modulation of lipid biosynthesis in the marine diatom *Cyclotella cryptica*
- 10:30-11:00 **OP33: Sónia A. O. SANTOS** (University of Aveiro, Portugal)
Lipophilic and phenolic compounds from natural resources: from bioprospection to innovative processes and applications
- 11:00-11:30 *Coffee/Tea Break*
- 11:30-12:30 **Session VIII**
Chairman: Miroslav KVASNICA (Czech Academy of Science & Palacký University, Czech Republic)
- 11:30-12:00 **IL8: Alfonso MANGONI** (Università degli Studi di Napoli "Federico II", Italy)
Quantum-mechanical methods in the study of natural products
- 12:00-12:15 **OP34: Ioannis P. GEROTHANASSIS** (University of Ioannina, Greece)
Enzymatic biotransformation, in-tube NMR monitoring, protein-ligand interactions, and in-cell NMR spectroscopy in natural products research
- 12:15-12:30 **OP35: Simon Vlad LUCA** (Technical University of Munich, Germany) – recipient of Dra. Mariola Macías Award
Separation of cannabinoids with liquid-liquid chromatography: a model-based approach
- 12:30-13:30 **PSE Annual General Meeting (AGM)**
- 13:30-15:00 *Lunch*
- 15:00-16:30 **Session IX**
Chairman: Angelo FONTANA (Institute of Biomolecular Chemistry, National Research Council & University of Naples "Federico II", Italy)
- 15:00-15:30 **IL9: Nadine ZIEMERT** (University of Tübingen, Germany)
Bioinformatics pipelines and tools to guide the discovery of new natural products
- 15:30-15:45 **OP36: Yannik SCHNEIDER** (UiT-The Arctic University of

- Norway, Norway)
ReSTRAIN – Strain selection for efficient bioprospecting.
Which traits indicate the biosynthetic potential of bacterial strains?
- 15:45-16:00 **OP37: Ludmila VČELAŘOVÁ** (Czech Academy of Science & Palacký University, Czech Republic)
Metabolic profiling of IAA in endoplasmic reticulum
- 16:00-16:15 **OP38: Leonor FERREIRA** (CIIMAR, University of Porto, Portugal)
New cytotoxic macrolide-type compound isolated from a cyanobacterium
- 16:15-16:30 **OP39: Lukasz JAREMKO** (King Abdullah University of Science and Technology, Kingdom of Saudi Arabia)
Biological motions facilitate druggability for challenging biomolecules
- 16:30-18:00 **Poster Presentations – Session B (poster presentations with odd numbers) with light refreshments**
- 18:00-20:00 **Session X**
Chairman: Alfonso MANGONI (Università degli Studi di Napoli “Federico II”, Italy)
- 18:00-18:30 **IL10: Olivier P. THOMAS** (National University of Ireland Galway, Ireland)
Marine biodiscovery in Irish waters
- 18:30-18:45 **OP40: Susete PINTEUS** (Polytechnic of Leiria, Portugal)
Exploring the antifouling potential of the red seaweed *Plocamium cartilagineum*
- 18:45-19:00 **OP41: Mariana GIRÃO** (CIIMAR, University of Porto, Portugal)
Exploring seaweed-associated Actinobacteria for the discovery of novel bioactive compounds
- 19:00-19:15 **OP42: Federica ALBIANI** (Institute of Biomolecular Chemistry, National Research Council, Italy)
Marine natural products identification and evaluation of potential immunomodulant and cytotoxic activity
- 19:15-19:30 **OP43: Philip JOHNSON** (King’s College London, UK)
73-Deoxychondropsin A: a novel marine sponge derived V-ATPase inhibitor disrupts osteoclast differentiation and bone resorption

- 19:30-19:45 **OP44: Inês RIBEIRO** (CIIMAR, University of Porto, Portugal)
Portuguese deep-sea treasures: bioprospection of
Actinobacteria capable of producing new natural products
- 19:45-20:00 **OP45: Lanna CHENG** (University of California, San Diego,
USA)
Wax secretions of the ocean insect *Halobates* - functions
and preliminary results
- 20:30- *Conference dinner – Greek night*

Thursday, May 26, 2022

- 09:00-11:00 **Session XI**
Chairman: Sónia A. O. SANTOS (University of Aveiro,
Portugal)
- 09:00-09:30 **IL11: Pinarosa AVATO** (Università degli Studi di Bari Aldo
Moro, Italy)
Exploring phytochemical biodiversity as a valuable asset for
drug discovery
- 09:30-09:45 **OP46: Katarzyna KIMEL** (Medical University of Gdańsk,
Poland)
In vitro analysis of antioxidant and anti-inflammatory
activity of comfrey root and leaf extracts with evaluation of
their chemical composition
- 09:45-10:00 **OP47: Immacolata FARAONE** (Università degli Studi della
Basilicata, Italy)
A scarlet food: *Solanum aethiopicum* L. liposomal extract
against oxidative stress
- 10:00-10:15 **OP48: Gabrielle BANGAY** (Universidade Lusófona de
Humanidades e Tecnologias, Portugal)
Royleanone diterpenoids from *Plectranthus* spp.
demonstrate P-glycoprotein inhibition
- 10:15-10:30 **OP49: Gabriela ŠKOVŘANOVÁ** (Masaryk University, Czech
Republic)
Synergistic activity of mulberry tree natural compounds
against MRSA
- 10:30-10:45 **OP50: Ieva MEŽAKA** (Institute for Environmental Solutions,
Latvia)
Quality assessment of micropropagated *Eryngium*

10:45-11:00	<i>maritimum</i> L.: endangered and protected medicinal plant OP51: Giovanni Andrea VITALE (Stazione Zoologica Anton Dohrn, Italy) Dihydroauroglauцин isolated from sponge endophyte marine fungus <i>Eurotium chevalieri</i> inhibits migration of human neuroblastoma cells
11:00-11:30	<i>Coffee/Tea Break</i>
11:30-12:45	Session XII Chairman: Pinarosa AVATO (Università degli Studi di Bari Aldo Moro, Italy)
11:30-12:00	IL12: Francisco A. MACÍAS (University of Cádiz, Spain) Development of the honeypot strategy by using eudesmanolide biostimulants to control parasitic plants
12:00-12:15	OP52: Gwenaëlle FLIELLER (University of Strasbourg, France) New method development to accelerate the discovery of bioherbicides
12:15-12:30	OP53: Chao ZHANG (Czech Academy of Science & Palacký University, Czech Republic) High throughput screening of bioactive auxin analogues in <i>Arabidopsis</i> using desorption electrospray ionization mass spectrometry imaging
12:30-12:45	OP54: Kristýna BIELESZOVÁ (Czech Academy of Science & Palacký University, Czech Republic) New fluorescently labelled auxins and elucidation of their biological activity in <i>Arabidopsis thaliana</i>
12:45-13:30	Prizes' Award & Closing Remarks
13:30-15:00	<i>Lunch</i> <i>Departure of participants / Optional excursion</i>

OP47

A scarlet food: *Solanum aethiopicum* L. liposomal extract against oxidative stress

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Nowadays, natural products and bioactive molecules are considered interesting alternatives to prevent or treat chronic diseases. One of the challenges of the last and the future decades is the improvement of their biological effects using nanotechnologies thus for this reason we have investigated the antioxidant effect of *Solanum aethiopicum* L. cv Rotonda (Scarlet eggplant) extract liposomal incorporation. Scarlet eggplant is a member of the Solanaceae family, and it is one of the most consumed vegetables in tropical Africa and in South Italy.¹ In the present study, the ethanolic peel extract, obtained by exhaustive maceration, was tested for its biological activity in the human hepatoma (HepG2), used as a model cell line.² The extract showed no cytotoxic activity and reduced the intracellular reactive oxygen species (ROS) level in *tert*-butyl hydroperoxide stressed conditions. The antioxidant activity was further improved when the extract was loaded into liposomes, promising drug carriers. Furthermore, the molecular mechanism responsible for the effect of the extract was investigated. The extract improved the expression of endogenous antioxidants, such as ABCG2, CAT, and NQO1, presumably through the Nrf2 pathway. These results demonstrated the antioxidant activity of *Solanum aethiopicum* extract especially when

incorporated in liposomes suggesting new potential applications in oxidative stress-linked illnesses like cancer, neurological and cardiovascular disorders.

[1] Nwanna E.E., Adebayo A.A., Ademosun A.O., et al. *J. Food*, **2019**, *43*, e12797.

[2] Sinisgalli C., Faraone I., Vassallo A., et al. *Antioxidants*, **2020**, *9*, 428-440.

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