

XXVII ENCONTRO NACIONAL

Sociedade Portuguesa de Química

Braga, 14-16 julho 2021



Chemistry and Opportunities in a Global Society

Book of abstracts

14-16th July 2021

Building II

Campus of Gualtar

University of Minho

Title

Livro de resumos do XXVII Encontro Nacional da Sociedade Portuguesa de Química
Book of abstracts of the XXVII National Meeting of the Portuguese Chemical Society

Editors

Ana Paula Estevão

Luís Monteiro

Maria Manuela Raposo

Sílvia Pereira-Lima

Susana Costa

Edition

Sociedade Portuguesa de Química

Graphic design

Renato Gonçalves

Sílvia Pereira-Lima

Date

July 2021

ISBN

978-989-8124-33-3 (digital edition)

Recommended cataloging

Livro de resumos do XXVII Encontro Nacional da Sociedade Portuguesa de Química

Departamento de Química, Universidade do Minho, 2021 – 345 p.

ISBN 978-989-8124-33-3

This book was produced from the abstracts submitted directly by the authors, in accordance with the rules publicly disclosed in the event's announcements. Only small formatting changes were introduced that did not modify the scientific contents, which are the sole responsibility of the respective authors.

Scientific Committee

Artur Silva – UA - SPQ President - Chair

Susana Costa - UM, Coordinator

Ana Isabel Ricardo - UNL

Anthony Burke - UEv

Armando Silvestre - UA

Baltazar Castro - UP

Carlos Afonso - UL

Cristina Freire - UP

Fernanda Proença - UM

M^a Lurdes Cristiano - UAIG

M^a Isabel Ismael - UBI

Mário Berberan e Santos – UL

Joana Amaral - IPB

João Rocha - UA

João Paulo Crespo - UNL

João Rodrigues - UMa

Rui Fausto - UC

Verónica Zea-Bermudez - UTAD

National Organizing Committee

SPQ Executive Committee

Artur Silva - UA, President

Joaquim Faria - UP, Vice-President

Adelino Galvão - UL, General Secretary

SPQ Delegations

Susana Costa - UM, Braga delegation

Jorge Parola - UNL, Lisbon delegation

Amparo Faustino - UA, Aveiro delegation

Sara Pinto - UC, Coimbra delegation

Victor Freitas - UP, Porto delegation

SPQ Divisions

M^a Teresa Conceição, UL

Paula Branco, UNL

João Pedro Lopes, UL

Manuel Minas da Piedade, UL

Filipe Paz, UA

M^a Emília Sousa, UP

Mário Simões, UA

Pedro Góis, UL

José Câmara, UMA

SPQ Training Center

Fernanda Carvalho, UL

Tânia Coelho

SPQ Bulletin

Paulo Mendes, UEv

SPQ Groups

Isabel Malaquias, UA

Sílvia Carriço, UA

Eduardo Marques, UP

Celso Reis, IPATIMUP

Luís Carlos, UA

Cláudia Silva, UP

Anabela Valente, UA

Filipe Paz, UA

Nuno Candeias, GQEst

M^a Inês Dias, GQJ

Daniel Santos, UP

SPQ Secretariat

Cristina Campos

Leonardo Mendes

List of Communications



XXVII | **ENCONTRO
NACIONAL**
Sociedade Portuguesa de Química

Food and natural products

Development and application of natural ingredients in the food industry

L. Barros, C. Pereira, I.C.F.R. Ferreira

Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal

Email: lillian@ipb.pt

Given the increasing awareness of consumers in what concerns healthy dietary habits, natural alternatives have been explored for artificial additives. In this context, plants and mushrooms are unquestionable sources of valuable compounds to be used as colouring, preservative, and bioactive compounds in food industry. The sustainable exploitation of these natural resources is of extreme importance and, therefore, efforts have been made to valorise bio-residues from food industry by recovering their compounds of interest to be included in natural additives formulation. Moreover, distinct techniques, such as maceration, ultrasound, or microwave-assisted extractions have been applied through optimized methodologies attempting to achieve an optimal extraction yield.

Thus, several compounds have been extracted from plants and mushrooms and applied in food matrices with different purposes. For example, betalains (e.g. gomphrenin II, gomphrenin III, isogomphrenin II, and isogomphrenin III) and anthocyanins (e.g. cyanidin, delphinidin, and malvidin derivatives) obtained from purple globe amaranth, rose, dahlia, centaurea, strawberry-tree, roselle, and blueberry have proved bioactive and colouring properties when incorporated in ice-cream, yogurt, and waffles.¹

Moreover, phenolic acids (e.g. rosmarinic acid), flavonoids (e.g. quercetin derivatives), and ellagitannins (e.g. sanguin H-10 and lambertianin) from mushrooms, wild strawberry, rosemary, mountain sandwort, and flowers of silva brava demonstrated bioactive properties when introduced in gelatin, yogurt, and cottage cheese.²

On the other hand, strawberry-tree, basil, lemon balm, sweet chestnut flowers, fennel, and German chamomile revealed to be great sources of preserving molecules with antioxidant and antimicrobial activity, such as flavonoids (e.g. catechin, and quercetin and luteolin derivatives), phenolic acids (e.g. rosmarinic, chicoric, lithospermic, caffeic, and caffeoylquinic acids), and hydrolysable tannins (e.g. trigalloyl-HHDP-glucoside), which were tested in loaf bread, cupcakes, yogurt, cheese, and cottage cheese.³

These natural extracts allowed promising results, leading to the development of natural alternatives to the massively used artificial additives.

Acknowledgements: The authors are grateful to the Foundation for Science and Technology (FCT, Portugal) for financial support by national funds FCT/MCTES to CIMO (UIDB/00690/2020). To the European Regional Development Fund (ERDF) through the Regional Operational Program North 2020, within the scope of Project *Mobilizador* Norte-01-0247-FEDER-024479: ValorNatural® and Project GreenHealth - Digital strategies in biological assets to improve well-being and promote green health, Norte-01-0145-FEDER-000042. To FEDER-Interreg España-Portugal programme through the project TRANSCoLAB 0612_TRANS_CO_LAB_2_P.

References:

1. Roriz C.L. et al. *LWT* **2018**, *92*, 101.
2. Dias M.I. et al. *J. Funct. Foods* **2015**, *16*, 243.
3. Takwa S. et al. *LWT* **2018**, *88*, 47.