



Abstract book of the XVIII National Meeting of the Portuguese Society of Chemistry



COM O ALTO PATROCÍNIO
DE SUA EXCELÊNCIA
UNDER THE HIGH PATRONAGE OF THE
PRESIDENT OF THE PORTUGUESE REPUBLIC



O Presidente da República

Title

Abstract book of the XVIII National Meeting of the Portuguese Society of Chemistry

Editors

Diana C. G. A. Pinto, Artur M. S. Silva, João Rocha

Committees

Scientific Committee

Artur Silva (UA) - Chair
João Rocha (UA) - Vice-Chair
Ana Isabel Ricardo (FCT UNL)
Baltazar Manuel Romão de Castro (FC UP)
Carlos Afonso (FF UL)
Cristina Freire (FC UP)
Fernanda Proença (UMinho)
Joaquim Faria (SPQ & FE UP)
Lillian Barros (IPB)
Mário Nuno Berberan e Santos (IST UL)
Rui Fausto (FCT UC)
Verónica Cortés de Zea Bermudez (UTAD)

Organizing Committee

Artur Silva - Chair
João Rocha - Vice-Chair
Amparo Faustino
Anabela Valente
Cláudia Lopes
Diana Cláudia Pinto
Filipe A. Almeida Paz
Jorge Saraiva
Manuel Coimbra
Pedro Carvalho
Rita Ferreira
Vânia Calisto

Secretary

Cristina Campos (SPQ)
Leonardo Mendes (SPQ)
Tânia Coelho - Centro de Formação da SPQ
Sociedade Portuguesa de Química
Av. República nº 45, 3º Esq., 1050-187 Lisboa, Portugal

National Organizing Committee

SPQ executives

Joaquim Faria (UP) - SPQ president
Luísa Martins (UL) - SPQ vice-president
Jorge Parola (UNL) - SPQ General Secretary

Goups

Isabel Malaquias (UA)
Maria do Rosário Bronze (UL)
Eduardo Marques (UP)
Celso Reis (IPATIMUP)
Luís Carlos (UA)
Cláudia Silva (UP)
Manuel Fernando Pereira (UP)
Maria Teresa Duarte (UL)
Pedro Vidinha (GQEst)
Ana Carolina Freitas de Jesus (GQJ)
Alexandre Magalhães (UP)
Helena Florêncio (UL)

Delegations

Susana Costa (UMinho) - Braga delegation coordinator
Vasco Bonifácio (UL) - Lisboa delegation coordinator
Amparo Faustino (UA) - Aveiro delegation coordinator
Sara Pinto (UC) - Coimbra delegation coordinator
Victor Freitas (UP) - Porto delegation coordinator

Divisions

Maria Teresa Conceição (UL)
Carlos Afonso (UL)
Manuel Minas da Piedade (UL)
Luísa Maia (UNL)
Maria Amparo Faustino (UA)
Mário Calvete (UC)
Christopher Brett (UC)
Ana Isabel Ramos Novo Amorim de Barros (UTAD)

Proximate composition and free sugar and fatty acid profiles of Asian hornet larvae: An alternative food source?

Alexis Pereira^{1,2}, Maria Inês Dias^{1,2}, Carla Pereira^{1,2}, M. Alice Pinto^{1,2}, Lillian Barros^{1,2}, José Pinela^{1,2,*}

¹Centro de Investigação de Montanha (CIMO), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal; ²Laboratório Associado para a Sustentabilidade e Tecnologia em Regiões de Montanha (SusTEC), Instituto Politécnico de Bragança, Campus de Santa Apolónia, 5300-253 Bragança, Portugal
*jpinela@ipb.pt

Asian hornet (*Vespa velutina nigrithorax*) is an invasive species native to Southeast Asia that unintentionally found its way into Europe in 2004.^{1,2} It was first reported in France and rapidly spread across the country and later into other European nations, including Portugal in 2011.² Asian hornet larvae are believed to be rich in nutrients, but further research is required to determine their potential as an alternative food source. Although entomophagy is recognized as a sustainable dietary practice for replacing animal protein and promoting food security, it has not received the deserved attention in many Western countries.³ Therefore, this study aimed to characterize the proximate composition and individual profiles of free sugars and fatty acids in Asian hornet larvae from nests collected in Northern Portugal. The Asian hornet population from each nest was immobilized with cold carbon dioxide. Thereafter, the nests were dissected to remove the larvae, which were analyzed for moisture, ash, protein, crude fat, and dietary fiber contents following official food analysis procedures.⁴ The carbohydrate content was estimated by difference, and the energy value was calculated according to current regulations.⁵ HPLC-RI and GC-FID techniques were employed to characterize the individual profiles of free sugars and fatty acids, respectively.⁶ The study revealed that proteins and carbohydrates were the most abundant macronutrients, followed by crude fat and dietary fiber. A 100 g portion of dehydrated larvae provided 446 kcal of energy. Furthermore, seven free sugars and twenty-five fatty acids were identified in the studied samples. Overall, these findings contribute to a more detailed characterization of the nutritional value of this invasive species' larvae. In future works, it will be important to perform other chemical analyses and promote the consumer's perception and attitude toward the inclusion of insects into sustainable contemporary diets.

Acknowledgements

This work is funded by the research Project POSEUR-03-2215-FC000164 through the Operational Program Sustainability and Efficiency in the Use of Resources (POSEUR-15-2021-02) and Cohesion Fund; A. Pereira is grateful for his research grant to this project. The authors also thank the Foundation for Science and Technology (FCT, Portugal) for the financial support through national funds FCT/MCTES to CIMO (UIDB/00690/2020 and UIDP/00690/2020) and SusTEC (LA/P/0007/2020). National funding by FCT, through the institutional scientific employment program-contract with M.I. Dias, C. Pereira, and L. Barros, and through the individual scientific employment program-contract with J. Pinela (CEECIND/01011/2018).

References

1. O. Haira, M. L. Alonso, R. M. Alonso, *Insects*, 2023, 14, 59.
2. K. Monceau, O. Bonnard, D. Thiéry, *J. Pest Sci.*, 2014, 87, 1-16.
3. V. B. Meyer-Rochow, R. T. Gahukar, S. Ghosh, C. Jung, *Foods*, 2021, 10, 1036.
4. AOAC International, *Official Methods of Analysis of AOAC International*, G.W. Latimer, 20th Ed., Gaithersburg, 2016
5. European Parliament, Council of the European Union, Regulation (EU). *Off. J. Eur. Union*, 2011, 27, 18-63.
6. J. Pinela, L. Barros, A. M. Carvalho, I. C. F. R. Ferreira, *Food Chem. Toxicol.*, 2012, 50, 829–834.