Icbees

International Congress on Bee Sciences

International Congress on Bee Sciences Abstract Book

www.beeandlifecongress.com

ONLINE

FREE OF CHARGE

16-17-18 June 2022

ISBN: 978-605-71368-2-4

AKU TTO

Afyon Zafer Teknopark Uşak

vehader Veterinary And Public Health Association

INTERNATIONAL CONGRESS ON BEE SCIENCES ABSTRACT BOOK

All authors are responsible for the contents of their abstracts.

https://www.beeandlifecongress.com/(biohealthcongress@gmail.com)

Editor Ulaş ACARÖZ

Published:

Editor's Note

The first 'International Congress on Bee Sciences' was organized online and free of charge. We are very happy and proud that various Bee science-related fields attended the congress. During this event, distinguished and respected scientists came together to exchange ideas, develop and implement new researches and joint projects. There were 25 invited speakers from 18 different countries. The scientific committee of the congress consisted of 211 scientists from more than 160 universities. Almost 500 participants participated in the congress. We would like to thank all participants and supporters. Hope to see you at our next congress.

Best wishes from Turkey

Assoc. Prof. Dr. Ulaş ACARÖZ

HONORARY BOARD

Prof. Dr. Mehmet Karakaş, President of Afyon Kocatepe University, Turkey. (Honorary President)

Prof. Dr. Artay Yağcı, Vice-Rector of Muğla Sıtkı Koçman University, Turkey.

Prof. Dr. Canan Hecer, Vice-Rector of Istanbul Esenyurt University, Turkey.

Prof. Dr. Erinda Lika, Vice-Rector of Agricultural University of Tirana, Albania.

Prof. Dr. Hazım Tamer Dodurka, President of Istanbul Rumeli University, Turkey.

Prof. Dr. Mehmet Emin Erkan, President of Şırnak University, Turkey.

Prof. Dr. Talat Naseer Pasha, President of University of Education Lahore, Pakistan.

Prof. Dr. Turan Civelek, Dean of Afyon Kocatepe University, Faculty of Veterinary Medicine, Turkey.

ORGANIZING COMMITTEE

Assoc. Prof. Dr. Ulaş Acaröz, Afyon Kocatepe University, Turkey, President.

Prof. Dr. Sinan Ince, Afyon Kocatepe University, Turkey, Congress General Secretary.

Prof. Dr. Abdullah Eryavuz, Afyon Kocatepe University, Turkey, Member of Committee.

Prof. Dr. İsmail Küçükkurt, Afyon Kocatepe University, Turkey, Member of Committee.

Prof. Dr. Kui Zhu, China Agricultural University, China, Member of Committee.

Prof. Dr. Zeki Gürler, Afyon Kocatepe University, Turkey, Member of Committee.

Assoc. Prof. Dr. Damla Arslan Acaröz, Afyon Kocatepe University, Turkey, Member of Committee.

Dr. Alexander Atanasoff, Trakia University, Bulgaria, Member of Committee.

Dr. Mehmet Aydın Akalan, Afyon Kocatepe University, Turkey, Member of Committee.

Dr. Fahriye Kan, Afyon Kocatepe University, Turkey, Member of Committee.

Nuri Taş, Afyon Kocatepe University, Turkey, Member of Committee.

Syeda Tasmia Asma, Afyon Kocatepe University, Turkey, Member of Committee.

Syed Rizwan Ali Shah, Afyon Kocatepe University, Turkey, Member of Committee.

SCIENTIFIC COMMITTEE

Prof. Dr. Abera Belay, Addis Ababa Science and Technology University, Ethiopia

Prof. Dr. Ahmet Dodoloğlu, Atatürk University, Turkey.

Prof. Dr. Ahmet Güler, Ondokuz Mayıs University, Turkey.

Prof. Dr. Ales Gregorc, University of Maribor, Slovenia.

Prof. Dr. Amar Zellagui, University Oum El Bouaghi, Algeria.

Prof. Dr. Ardo Sabir, Universitas Hasanuddin, Indonesia.

Prof. Dr. Armağan Erdem Ütük, Cukurova University, Turkey.

Prof. Dr. Badiâa Lyoussi, University Sidi Mohamed Ben Abdallah, Morocco.

Prof. Dr. Banu Yücel, Ege University, Turkey.

Prof. Dr. Behija Dukic, University of Sarajevo, Bosnia and Herzegovina.

Prof. Dr. Bożena Denisow, University of Life Sciences in Lublin, Poland

Prof. Dr. Camila Nonato Junqueira, Universidade Federal de Uberlândia, Brazil

Prof. Dr. Carolina Graciela Nebot Garciat, University of Santiago de Compostela, Spain.

Prof. Dr. Cleofas R Cervancia, University of the Philippines Los Baños, Philippines.

Prof Dr. Daniel S. Dezmirean, University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, Romania.

Prof. Dr. Daniel Nicodemo, Universidade Estadual Paulista, Brazil.

Prof. Dr. Dharam Pal Abrol, Sher-e-Kashmir University of Agricultural Sciences and Technology, India.

Prof. Dr. El-Kazafy A. Taha, Kafrelsheikh University, Egypt.

Prof. Dr. Esra Çapanoğlu, Istanbul Technical University,

Prof. Dr. Evgeniya Ivanova, University of Plovdiv “Paisii Hilendarski“, Bulgaria.

Prof. Dr. Evgeny Eskov, Russian State Agrarian Correspondence University, Russia.

Prof. Giovanni Benelli, University of Pisa, Italy.

Prof. Dr. Guntima Suwannapong, Burapha University, Thailand.

Prof. Dr. H Vasfi Gençer, Ankara University, Turkey.

Prof. Dr. Hasan Hüseyin Oruç, Uludağ University, Turkey.

Prof. Dr. Hesham R. El-Seedi, Uppsala University, Sweden.

Prof. Dr. Horacio Heinzen, Universidad de la República, UdelaR, Uruguay.

Prof Dr. Ivana Tlak Gajger, University of Zagreb, Croatia.

Prof. Dr. İsmail Karaca, Isparta Uygulamalı Bilimler University, Turkey.

Prof. Dr. Jesus L Yaniz, University of Zaragoza, Spain.

Prof. Dr. Joana S. Amaral, Instituto Politécnico de Bragança, Portugal.

Prof. Dr. José Eduardo Serrão, Universidade Federal de Viçosa, Brazil.

Prof. Dr. José María Fresno, University of León, Spain.

Prof. Dr. José Octavio Macías-Macías, Universidad de Guadalajara, Mexico.

Prof. Dr. Karsten Münstedt, Ortenau Klinikum Offenburg-Kehl, Germany

Prof. Dr. Khaled A. Osman, Alexandria University, Egypt.

Prof. Dr. Koula Doukani, University of Ibn Khaldoun – Tiaret, Algeria.

Prof. Dr. Kui Zhu, China Agricultural University, China.

Prof. Dr. Leila Bendifallah, University M'Hamed Bougara of Boumerdes, Algeria.

Prof. Dr. Lesław Juszczak, Uniwersytet Rolniczy w Krakowie, Poland.

Prof. Dr. Leticia M Estevinho, Polytechnic Institute of Bragança, Portugal.

Prof. Dr. Lumturi Sena, Agricultural University of Tirana, Albania

Prof. Dr. M Alice Pinto, Polytechnic Institute of Bragança, Portugal.

Prof. Dr. Maria G. Campos, University of Coimbra, Portugal.

Prof. Dr. Mehmet Musa Özcan, University of Selcuk, Turkey.

Prof. Dr. Michelle M Morais, Universidade Federal de São Paulo (Unifesp), Brazil.

Prof. Dr. Mircea Oroian, Stefan Cel Mare University of Suceava, Romania

Prof. Dr. Nazmiye Güneş, Uludağ Uninversity, Turkey.

Prof. Dr. Nuray Şahinler, Uşak University, Turkey.

Prof. Dr. Nyuk Ling Chin, Universiti Putra Malaysia, Malaysia

Prof. Dr. Ofélia Anjos, Universidade Lisboa, Portugal

Prof. Dr. Oktay Yıldız, Karadeniz Technical University, Turkey.

Prof. Dr. Oscar Herrera Calderon, Universidad Nacional Mayor de San Marcos, Peru

Prof Dr Pavel Krasochko, Vitebsk Stata Academy of Veterinary Medicine.

Prof. Dr. Patricia Vit, Universidad de Los Andes, Venezuela.

Prof Dr Petr Krasochko, Vitebsk Stata Academy of Veterinary Medicine.

Prof. Dr. Paweł Olczyk, Medical University of Silesia in Katowice, Polish Academy of Sciences, Poland

Prof. Dr. Pilar De la Rúa, University of Murcia, Spain.

Prof. Dr. Ram Chander Sihag, CCS Haryana Agricultural University, India.

Prof. Dr. Ratna Thapa, Tribhuvan University, Nepal.

Prof. Dr. Ricardo de Oliveira Orsi, – São Paulo State University, Brazil

Prof. Dr. Salah Akkal, University constantine 1, Algeria.

Prof. Dr. Severino M. Alencar, University of São Paulo, Brazil.

Prof. Dr. Sevgi Kolaylı, Karadeniz Tecnical University, Turkey.

Prof. Dr. Shafqat Saeed, MNS University of Agriculture, Pakistan

Prof. Dr. Sibel Silici, Erciyes University, Turkey.

Prof. Dr. Silvia Patruica, Banat University of Agronomical Sciences and Veterinary Medicine, Romania.

Prof. Dr. Stelios Couris, University of Patras, Greece.

Prof. Dr. Subir Bera, University of Calcutta, India.

Prof. Dr. Syed Ghulam Musharraf, University of Karachi, Pakistan.

Prof. Dr. Şengül Alpay Karaoğlu, Recep Tayyip Erdoğan Üniversity.

Prof. Dr. Theodoros Varzakas, University of the Peloponnese, Greece.

Prof. Dr. Tiago Mauricio Franco, Universidade de São Paulo, Brazil.

Prof. Dr. Ticiano Gomes do Nascimento, University of Alagoas, Brazil.

Prof. Dr. Vassya Bankova, Bulgarian Academy of Sciences, Bulgaria.

Prof. Dr. Venkataramegowda Sivaram, Bangalore University, India.

Prof. Dr. Yohandra Reyes Torres, State University of Midwest (UNICENTRO), Brazil.

Prof. Dr. Zehra Hajrulai-Musliu, Ss. Cyril and Methodius University in Skopje, Nord Macedonia.

Prof. Dr. Giovanni Benelli, University of Pisa, Italy.

Prof. Dr. Ana Maria Josceanu, Universitatea Politehnica din Bucureşti, Romania.

Prof. Dr Mirjana Pesic, University of Belgrade, Serbia.

Prof. Dr. Martínez López, Vicente, Department of Evolution, Ecology and Behaviour. University of Liverpool., United Kingdom.

Prof. Dr. Yun Kang, Arizona State University, USA.

Prof. Dr. Ivana Tlak Gajger, University of Zagreb, Croatia.

Prof. Dr. Alberto Angioni, University of Cagliari, Italy.

Assoc. Prof. Erkay Özgör, Cyprus International University, Nord Cyprus.

Assoc. Prof. Adriana Nowak, Lodz University of Technology, Poland.

Assoc. Prof. Dr. Pınar Terzioğlu, Bursa Technical University, Turkey.

Assoc. Prof. Dr. Abdullah Aslan, Firat University, Turkey.

Assoc. Prof. Dr. Maria Graca Miguel, University of Coimbra, Portugal.

Assoc. Prof. Dr. Marina Basualdo, Universidad Nacional del Centro de la Provincia de Buenos Aires, Arjantina.

Assoc. Prof. Dr. Rahimah Zakaria, Universiti Sains Malaysia, Malaysia.

Assoc. Prof. Dr Narimane Segueni, University Salah Boubnider, Algeria.

Assoc. Prof. Dr. Adriana Nowak, Lodz University of Technology, Poland.

Assoc. Prof. Dr. Alberto Satta, Università degli Studi di Sassari, Italy.

Assoc. Prof. Dr. Aleksandar Ž Kostić, University of Belgrade, Zemun, Serbia

Assoc. Prof. Dr. Alexandra Christine Helena Frankland Sawaya, UNICAMP, Brazil.

Assoc. Prof. Dr. Aneta A Ptaszyńska, Maria Curie-Skłodowska University, Poland

Assoc. Prof. Dr. Aslı Özkırım, Hacettepe University, Turkey.

Assoc. Prof. Dr. Aslı Özkök, Hacettepe University, Turkey.

Assoc. Prof. Dr. Aziz Gül, Mustafa Kemal University, Turkey.

Assoc. Prof. Dr. Behnam Rostami, University of Zanja, Iran.

Assoc. Prof. Dr. Dimitris Mossialos, University of Thessaly, Greece.

Assoc. Prof. Dr. Dinko Dinkov, Trakia University, Bulgaria.

Assoc. Prof. Dr. Dzmitry Barysavets, Institute of Experimental Veterinary Medicine named of S.N. Vyshelessky, Belarus

Assoc. Prof. Dr. Halil Yalçın, Burdur Mehmet Akif Ersoy University, Turkey.

Assoc. Prof. Dr. Hüseyin Şahin, Giresun Üniversiy, Turkey.

Assoc. Prof. Dr. Javaid Iqbal, King Saud University, Saudi Arabia.

Assoc. Prof. Dr. Krešimir Matanović, University of Zagreb, Croatia

Assoc. Prof. Dr. Luca Ruiu, Università degli Studi di Sassari, Italy.

Assoc. Prof. Dr. Mahaneem Mohamed, Universiti Sains Malaysia, Malaysia.

Assoc. Prof. Dr. Mahir Murat Cengiz, Atatürk University, Turkey.

Assoc. Prof. Dr. Maja Ivana Smodiš Škerl, Kmetijski inštitut Slovenije, Slovenia.

Assoc. Prof. Dr. Mehmet Özkan Timurkan, Atatürk Univeristy, Turkey.

Assoc. Prof. Dr. Meral Kekeçoğlu, Düzce University, Turkey.

Assoc. Prof. Dr. Mohamed Shebl, Suez Canal University, Egypt.

Assoc. Prof. Dr. Mohd Fadzelly Abu Bakar, Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia

Assoc. Prof. Dr. Najmeh Sahebzadeh, University Putra Malaysia, Malaysia.

Assoc. Prof. Dr. Nesrin Ecem Bayram, Bayburt University, Turkey.

Assoc. Prof. Dr. Saliha Dinc, Selçuk University, Turkey.

Assoc. Prof. Dr. Seyda Sahin, Sivas Cumhuriyet University, Turkey,

Assoc. Prof. Dr. Suriana Sabri, Universiti Putra Malaysia, Malaysia.

Assoc. Prof. Dr. Şaban Keskin, Bilecik Şeh Edebali University, Turkey.

Assoc. Prof. Dr. Usman H. Dukku, Abubakar Tafawa Balewa University, Nigeria.

Assoc. Prof. Dr. Veeranan Chaimanee, Maejo University, Thailand

Assoc. Prof. Dr. Yahya Al Naggar, Martin-Luther University Halle-Wittenberg, Germany / Tanta University, Egypt.

Assoc. Prof. Dr. Yaşar Erdoğan, Bayburt University, Turkey.

Assoc. Prof. Dr. Zehra Can, Bayburt University, Turkey.

Assist. Prof. Dr. Ahmad Ali, University of Mumbai., India

Assist. Prof. Dr. Atul Kumar Gupta, Himachal Pradesh Agricultural University, India.

Assist. Prof. Dr. Ayca Ozkan Koca, Maltepe University, Turkey.

Assist. Prof. Dr. Chet Prasad Bhatta, Radford University, USA.

Assist. Prof. Dr. Cristina Almeida-Aguiar, University of Minho, Portugal.

Assist. Prof. Dr. Fatih Ramazan İstanbullugil, Kyrgyz-Turkish Manas University, Kyrgyzstan.

Assist. Prof. Dr. Gültekin Bilgin, Bezmialem Vakıf University, Turkey.

Assist. Prof. Dr. Mehwish Jamil Noor, Fatima Jinnah Women University, Pakistan.

Assist. Prof. Dr. Merve Keskin, Bilecik Şeh Edebali University, Turkey.

Assist. Prof. Dr. Nur Cebi, Yıldız Technical University, Turkey.

Assist. Prof. Dr. Onur Tosun, Karadeniz Technical University, Turkey

Assist. Prof. Dr. Ömer Çakmak, Istanbul Esenyurt University, Turkey.

Assist. Prof. Dr. Özlem Saral, Recep Tayyip Erdogan University, Turkey

Assist. Prof. Dr. Petar Ristivojević, University of Belgrade, Serbia.

Assist. Prof. Dr. Servet Arslan, Akdeniz University, Turkey.

Assist. Prof. Dr. Tuncer Çakmak, Van Yüzüncü Yıl University, Turkey.

Dr. Anne Dalmon, Inrae, France.

Dr. Diego E., Universidad de Buenos Aires, Argentina.

Dr. Michał Górecki, Medical University of Silesia, Poland.

Dr. Radosław Balwierz, Śląska Wyższa Szkoła Medyczna, Poland.

Dr. Carlos Aurelio Medina Flores, Universidad Autónoma de Zacatecas, México.

Dr. Ezio Venturino, Università degli Studi di Torino, Italy.

Dr. Simone Lioy, University of Turin, Italy.

Dr. José A. Oteros, University of Cordoba, Spain.

Dr. Muhammad Asif Aziz, Pir Mehr Ali Shah Arid Agriculture University, Pakistan.

Dr. Konstantinos M. Kasiotis, Benaki Phytopathological Institute, Greece.

Dr. Antonio Nanetti, CREA Research Centre for Agriculture and Environment, Italy.

Dr. Ana Molineri, Consejo Nacional de Investigaciones Científicas y Técnicas, Argentina.

Dr. Matias Maggi, Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina.

Dr. Christopher L. Mayack, Sabanci University, Turkey.

Dr. Raquel Martín-Hernández, Instituto de Recursos Humanos para la Ciencia y la Tecnología (INCRECYT-FEDER), Spain.

Dr. Bamidele, **Julius Akolawole**, Federal University Of Agriculture Abeokuta, Nigeria.

Dr. Adriana Pacini, Instituto Nacional de Tecnología Agropecuaria EEA Rafaela, Argentina.

Dr. Alessandra Durazzo, CREA-Research Centre for Food and Nutrition, Italy.

Dr. Ali Jaber, Lebanese University, Lebanon.

Dr. Ana Paula Souza, University of Campinas, Brazil

Dr. Aneta Joanna Strachecka, University of Life Sciences in Lublin, Poland.

Dr. Anna Kurek-Gorecka, Medical University of Silesia in Katowice, Poland.

Dr. Beqe Hulaj, Food and Veterinary Agency, Kosova.

Dr. Carlos Horacio Acosta-Muñiz, Centro de Investigación en Alimentación y Desarrollo A.C, Mexico.

Dr. Cooper Nat Schouten, Southern Cross University, Australia.

Dr. Deepak M Kasote, Bharati Vidyapeeth University, India.

Dr. Delka Salkova, Bulgarian Academy of Sciences, Bulgaria.

Dr. Elisabeta-Irina Geană, National Research and Development Institute for Cryogenics and Isotopic Technologies, Romania.

Dr. Eshaifol Azam Omar, Universiti Sains Malaysia Bertam, Malaysia.

Dr. Esin Keleş Arslan, Republic of Turkey Ministry of Agriculture and Forestry, International Center For Livestock Research and Traning, Turkey.

Dr. Franca Rossi, IZS Istituto Zooprofilattico Sperimentale, Italy.

Dr. Francisco Javier Monge Navarro, Autonomous University of Baja California, Mexico.

Dr. Franco Mutinelli, National Reference Center for Beekeeping, Legnaro, Italy

Dr. Giovanni Cilia, CREA Research Centre for Agriculture and Environment, Italy.

Dr. Halil Ozancan Arslan, Republic of Turkey Ministry of Agriculture and Forestry, International Center For Livestock Research and Traning, Turkey.

Dr. Ilaria Negri, Università Cattolica, Italy.

Dr. Jelena Ćirić, University of Belgrade, Serbia

Dr. Juan Campos-Guillén, Autonomous University of Queretaro, Mexico.

Dr. Julius Akolawole Bamidele, Federal University of Agriculture, Nigeria.

Dr. Karina Antúnez, Instituto de Investigaciones Biológicas Clemente Estable, Uruguay.

Dr. Léo Correia da Rocha-Filho, Universidade de São Paulo-USP, Brazil.

Dr. Leonardo Pablo Porrini, Universidad Nacional de Mar del Plata, Argentina.

Dr. Martín Pablo Porrini, Universidad Nacional de Mar del Plata, Argentina.

Dr. Miguel Vilas-Boas, Instituto Politecnico de Braganca, Portugal.

Dr. Nahid Shokri Bousjein, Kharazmi University, Iran.

Dr. Natasha Schvezov, Instituto de Biología Subtropical (CONICET-UNaM), Argentina.

Dr. Nelly N Ndungu ,International Centre of Insect Physiology and Ecology ,Kenya

Dr. Nicolas Cardinault, Société Pollenergie, France.

Dr. Nizar Jamal Haddad, National Agricultural Research Center, Jordan.Jamal

Dr. Norhasnida Zawawi, Universiti Putra Malaysia, Malaysia.

Dr. Otilia Bobis, USAMV Cluj-Napoca.

Dr. Pablo D. Revainera, Universidad Nacional de Mar del Plata, Argentina

Dr. Pablo Giménez Martínez, Universidad Nacional de Mar del Plata, Argentina.

Dr. Patrice Kasangaki, National Livestock Resources Research Institute (NaLIRRI), Uganda

Dr. Rafeezul Mohamed, Universiti Sains Malaysia, Malaysia.

Dr. Rika Raffiudin, Bogor Agricultural University, Indonesia.

Dr. Roberto Consonni, Institute of Chemical Sciences and Technologies "G. Natta" (SCITEC), Italy.

Dr. Rodolfo Torres-deLosSantos, University of Tamaulipas, Mexico.

Dr. Rustem Ilyasov, Ufa Federal Research Center, Russia

Dr. Sandra K Medici, Universidad Nacional de Mar del Plata, Argentina.

Dr. Sandra M. Jakšić, Scientific Veterinary Institute "Novi Sad", Serbia.

Dr. Sedat Sevin, Ankara University, Turkey.

Dr. Tatjana Baltić, University of Belgrade, Serbia.

Dr. Ülkü Zeynep Üreyen Esertaş, Karadeniz Technical University, Turkey.

Dr. Vanilda Aparecida Soares de Arruda, University of Sao Paulo, Brazil.

Dr. Wim Reybroeck, Instituut voor Landbouw-, Visserij- en Voedingsonderzoek, Belgium.

Dr. Yan Ping Chen, USDA-ARS Bee Research Laboratory, USA.

Dr. Shupeng Yang, China Agricultural University, China.

CONTENTS

Determination of chemical content of Bingöl royal jelly by LC-MS/MS **Cüneyt Çağlayan, Rahime Erzincan, Ebubekir İzol, Fatih Mehmet Kandemir, Mustafa İleritürk, Cihan Gür**	
Biosynthesis of honey-mediated zno nanoparticles and ınvestigation of their ın vitro cytotoxicity for dermocosmetic applications **Ogün Bozkaya, Esra Arat, Yaşar Şahin**	
Identification of the entomological origin of European honey by high resolution melting analysis of a COI mini-barcode **Mónica Honrado, Ana R. Lopes, M. Alice Pinto, Joana S. Amaral**	
Show me the honey: melitourism potential of Bali, Indonesia and bicol, Philippines **Amelia R. Nicolas, Hanilyn A. Hidalgo, Mia Bella R. Fresnido, I Gede Pasek Mangku, I Gusti Bagus Udayana**	
The new animal health law of the Eu and its implications of honey bees and bumblebees **Franco Mutinelli**	
Physico-chemical characterization of Quercus pyrenaica honeydew honey **Rania Slama, Kheira M. Mouffok, Andreia Tomás, Soraia I. Falcão, Miguel Vilas-Boas**	
Bee microbiome: Insight into host- microbe evolution and bee health **Priya Sundrrajan**	
Comparison of tetragona clavipes (apidae, meliponini) honey from different regions of Brazil **Mayara Faleiros Quevedo, Tiago Maurício Francoy**	
Bees and bee products-bio-indicators of environmental pollution **Geană Elisabeta-Irina, Ciucure Corina Teodora**	
Stingless bee honey: potential tool in the floral induction of Mango **Albores-Flores, Victor Jesús; Pérez-Santos, Grisel, López-García, José Alfonso, Torres de los Santos, Rodolfo, Grajales-Conesa, Julieta, Cordova Albores, Liliana Carolina, Marycarmen Utrilla Vázquez**	
Effects of probiotics on honeybee diseases and bee products **Hasan Hüseyin Ünal**	
Establishing standards to strength the ınternational trade of bee products **Miguel Vilas-Boas, Ofélia Anjos, Maria G. Campos, Paulo Russo-Almeida, Soraia I. Falcão**	
First Record of Chemical Content, Antimicrobial and Antioxidant Activity of Queen Bee and Drone Larvae of Yığılca Honey Bee Ecotype **Emine Sönmez, Meral Kekeçoğlu, Hüseyin Şahin, Arif Bozdeveci, Şengül Alpay Karaoğlu**	
Characterization of 5 pollen samples from Castelo Branco **Carlos A.L. Antunes, Luís G. Dias, Leticia M. Estevinho, Celina Barroca, Mafalda Resende, Ofélia Anjos**	
Review on Honey Incorporated Polymer Hydrogels for Wound Healing Applications **Özge Kuyucak, Pınar Terzioğlu**	
Comprehensive Phytochemical Profile Of Ordu Province Propolis By LC-MS/MS **Ebubekir İZOL, Mustafa Abdullah YILMAZ, İsmail YAPICI, Ercan BURSAL, İsa YILMAZ, İlhami GÜLÇİN**	
Varroa Destructor Infestation in Honey Bees in Ankara Region, and Antioxidant Properties of Produced Honey **Efe KURTDEDE, Ahmet Mahmut ALPEREN, Berk BARAN**	
Investigation of the presence of virus infections in honey bee colonies in Afyonkarahisar Province **Ahmet Sait, Ömer Barış İnce**	
The Use of Biosensors in the Determination of Fenolic Compounds in Honey **Umut Kökbaş**	
Artificial Intelligence and Digital Technologies Produced and Developed for the Health and Future of Honey Bees and Bee Colonies **Sevgi AYDIN, Kemal Gökhan NALBANT, Beyza ERYILMAZ**	
Antimicrobial and Anti-quorum Sensing Activities of Lavander (Karabaş) Honey **Ülkü Zeynep Üreyen Esertaş, Aslı Özkok, Sevgi Kolaylı**	

Biochemical composition of Eucalyptus camaldulensis oil and solvent extracts from Flora of Hatay/Turkey **Mustafa Yipel, Aysun İlhan, Musa Türkmen**	
Simulation and Decision-Making In a Bio-Hybrid Beehive **Volha Taliaronak, Heinrich Mellmann, Verena V. Hafner**	
Molecular Detection of Bee Pathogens in Honey Bee Pollen Samples in Bulgaria **Delka Salkova , Rositsa Shumkova, Ralitsa Balkanska , Nadezhda Palova, Boyko Neov, Georgi Radoslavov, Peter Hristov**	
Conservation of European m-lineage honey bees using abdominal colour as an ındicator of subspecies purity has pitfalls **Dora Henriques, Ana R. Lopes, Roberto Ferrari, Cátia J. Neves, Andreia Quaresma, Keith A. Browne, Grace P. McCormack, M. Alice Pinto**	
Major royal jelly protein 2 (mrjp2) gene as the potential honey authentication marker of Apis mellifera and A. cerana javana **Nurul Insani Shullia, Rika Raffiudin, Tia Vina Febiriania, Nisfia Rakhmatun Nisa, Jenny Rahmadini, Hari Purwanto, Tri Atmowidi**	
Colonization patterns of Nosema ceranae in the Azores archipelago **Ana R. Lopes, Sara K. Segura, Raquel Martín-Hernández, Dora Henriques, M. Alice Pinto**	
Natural bee products and apitherapy for cancer prevention and treatment **Sevgi Gezici**	
The effect of honey bee (Apis mellifera L.) venom and apamin on acute epilepsy **Bilge Yüksel, Meral Kekeçoğlu**	
Nutritional composition and macro nutrient digestibility of bee pollen and bee bread: a simulated ın vitro gastrointestinal digestion approach **Volkan Aylanc, Soraia I. Falcão, Miguel Vilas-Boas**	
The antimicrobial properties of poplar and aspen–poplar propolises and their active components against selected microorganisms, including Helicobacter pylori **Jarosław Widelski, Piotr Okińczyc, Emil Paluch, Tomasz Mroczek, Jakub Szperlik, Zuriyadda Sakhipova, Ioanna Chinou, Krystyna Skalicka-Woźniak, Anna Malm, Izabela Korona-Głowniak**	
Seasonal changes in the circulation of viruses and mixed infection in the population of honey bees Apis mellifera L. **A. V. Korolev, S.L. Nesterchuk, Z. G. Kokaeva, T. A. Kapustina**	
Pesticides as a leading cause for the increasing honey bee colony losses in Bulgaria **Evgeniya N. Ivanova, Plamen P. Petrov**	
Apis laboriosa (Hymenoptera, Apidae) confirmed by morphometric and genetic analyses from sites of sympatry with apis dorsata in Arunachal Pradesh, North East, India **Nyaton Kitnya, Gard W. Otis, Jharna Chakravorty, Deborah R. Smith, Axel Brockmann**	
Dark European honey bee Apis mellifera mellifera benefits and its gut microbiome features **R.A Ilyasov, M.V, Marsova, A.S Kovtun, A.A. Vatlin, R.A.Yunes, R.R. Khisamov, R.R. Khisamova, A.Yu. Ilyasova, H.W. Kwon, J.I. Takahashi, V.N.Danilenko**	
Invasion patterns of Vespa velutina nigrithorax in Southern Europe: A genetic perspective **Andreia Quaresma, Dora Henriques, Joana Godinho, Xulio Maside, Laura Bortolotti, M. Alice Pinto**	
The beehive as biomonitor of pesticide residues in agroecosystems **Silvina Niell, Florencia Jesús, Melina Dorrego, Romina Genolet, Estela Santos, Rosana Diaz, Yamandu Mendoza, María Verónica Cesio, Horacio Heinzen**	
Effect of bee-pollen supplementation on performance, carcass traits and blood parameters of broiler **Soha A. Farag, T.K. El-Rayes**	
The importance of citizen science protocols for the formation of stingless beekeepers **Celso Barbieri, Tiago Mauricio Francoy, Natalia Pirani Ghilardi-Lopes, Sheina Koffler, Bruno Albertini, Jailson Leocádio, Antônio Mauro Saraiva**	
Antifungal activity of "HO21-F", a formulation based on Olea europaea plant extract, in honey bees infected with Nosema ceranae **José Duguet, Fabián Zuñiga, Jessica Martínez**	

Maturity evaluation in stingless bee honey; Soconusco, Chiapas **Grajales-Conesa, Julieta, Matul-Ramos Kevin, López-García, José Alfonso, Torres de los Santos, Rodolfo, Albores-Flores, Víctor Jesús, Córdova-Albores, Liliana Carolina**	
Exposure to Nepalese propolis alters the metabolic state of Mycobacterium tuberculosis **Jarosław Widelski, Rafał Sawicki, Piotr Okińczyc, Wieslaw Truszkiewicz, Joanna Golus, Elwira Sieniawska**	
Surviving rate and cluster analysis of hives after winter in 2019 according to the statement of Turkish beekeepers **Erdem Danyer, Sedat Sevin, Ahmet Sertçelik, Banu Çakır**	
Diversity and Functions of Bee Microbiota **Ayse Ebru Borum**	
POSTER PRESENTATIONS	
A book on resins and propolis in stingless bee life **Patricia Vit, Vassya Bankova, Milena Popova, David W. Roubik**	
Spirulina as for a natural source of protein for bee colonies Apis mellifera caucasia **Ivoilova Maria Mikhailovna, Dementeva Ekaterina Aleksandrovna, Skvortsova Lyudmila Nikolaevna**	
Use of propolis powder as a functional food ingredient **Yanet Irigoiti, Diego K. Yamul, Alba S. Navarro**	
A precise and fully automatic MATLAB-based tool for honey bee subspecies diagnosis based on wing morphometric analysis **Ernesto Angel-Beamonte, Pilar Santolaria, Susana Cortés-Calvo, Irene Muñoz, Pilar De la Rua, Jesús Yániz**	
Morphometric differentiation of Apis mellifera iberinesis in the Balearic Islands **Jesús Yániz, Ernesto Angel-Beamonte, Irene Muñoz, Pilar De la Rua, Pablo Espejo, Pilar Santolaria**	
Seasonal variation of quality parameters of the brazilian red propolis from Alagoas: chemical and microbiological assays **Matheus Vinicius Guimarães de Melo, Arthur Luy Tavares Ferreira Borges, Emanoel Guilhermino da Silva Junior, Erisson Lima Silva, Fernanda Geny Calheiros Silva, João Victor Lessa de Oliveira, Kathylen Vitória Ferreira dos Santos, Lucas Rafael de Oliveira Silva, Monique Almeida Vila Nova, Nataly Christine Soares Gama, Salvana Priscylla Manso Costa, Ticiano Gomes do Nascimento**	
Relevance of pH in microbiological quality parameters of honey from native stingless bees **Antonella R. Muzzio, Guillermo Mongelós, Naldo Pellizzer, Amada B. Pucciarelli, Andrea M. Dallagnol**	
The use of biosensors in the determination of diastase activity in honey **Umut Kökbaş**	
Genomic DNA isolation methods from honey bee (Apis mellifera L.) spermatheca **Carlos A. Yadró, Ana R. Lopes, Dora Henriques, Chiraz Soltani, Manoela Marques, Jakob Wegener, Eduard Musin, M. Alice Pinto**	
An overview of the chemical contaminants in honey **Jelena Ćirić, Vesna Đorđević, Tatjana Baltić, Ivana Branković Lazić, Sara Rajić, Jelena Jovanović, Nenad Parunović**	
Antimicrobial activity of bee bread **Tatjana Baltić, Sara Rajić, Ivana Branković Lazić, Vesna Đorđević, Branko Velebit, Mirjana Lukić, Jelena Ćirić**	
Synthesis of green copper nanoparticles: antimicrobial properties **Limberg Jaldin-Crespo, Marcelo Ezquer, Jessica Martínez**	
Critical levels of Pb and Cd accumulation in the bees' bodies stimulating gatherings of bee colonies **E.K. Eskov, M.D. Eskova**	
Comparative study of the prevalence of nosemosis in honey bees in Bulgaria and Estonia **Delka Salkova, Sigmar Naudi**	

Biomonitoring of industrialized areas (tanning industry) in northeastern Italy using beecollected pollen **Marianna Martinello, Chiara Manzinello, Ilenia Giuliato, Orietta Muzzolon, Franco Mutinelli**	
Establishing of taxonomic affiliation and hybridization of honeybees (Apis melifera) in Belarus using molecular genetic methods **Elena Guzenko, Nastassia Tsar, Viachaslav Kipen, Valentina Lemesh**	
Bee food: are the supplements and substitutes quality granted? **Soraia I. Falcão, Maja Ivana Smodiš Šker, Alessandra Giacomelli, Robert Clebo, Giancarlo Quaglia, Michel Bocquet**	
Ethanolic extracts of propolis from Apis mellifera and Scaptotrigona mexicana in the inhibition of pathogenic microorganisms in the silage of tropical pastures **López-García José Alfonso, Grajales-Conesa Julieta, Albores-Flores, Víctor Jesús, De GyvesCordova María Guadalupe, Coronel-Niño, Rito, Rayo-Alvarez, Johana Briseyda**	
Analytical method for pesticide residues quantitation in honey by LC-MS/MS **Ana Paula Ferreira de Souza, Mateus Henrique Petrarca, Nadia Regina Rodrigues, Patricia Aparecida Campos Braga, Felix Guillermo Reyes Reyes**	
Isolation of yeast in propolis and geopropolis from native bees with fermentative potential **Fernanda Assumpção Costa, Ana Carolina Souza Ramos de Carvalho, Fabio Rodrigues, Tiago Mauricio Francoy**	
Modeling pesticide exposure on honeybee population dynamics with seasonality **Jun Chen, Adrian Fisher, Gloria DeGrandi-Hoffman, Jennifer Fewell, Jon Harrison, Yun Kang**	
Impacts of climate change on the honeybee-parasite system **Jun Chen, Jordy Rodriguez-Rincon, Gloria DeGrandi-Hoffman, Jon Harrison, Yun Kang**	
Health properties of crushed honey **Aneta A. Ptaszyńska, Marcin Sudziński, Magdalena Kunat**	
Antifungal activity of poplar, green and red propolis: a screening study in preservation of table grapes **Andreia Tomás, Paula Rodrigues, Moustapha Diallo, Soraia I. Falcão, Miguel Vilas-Boas**	
Mead production utilizing wild yeast from stingless and solitary bees. **Ana Carolina Souza Ramos de Carvalho, Gustavo Góes Serec, Fabio Rodrigues, Tiago Mauricio Francoy**	
Floral visitors of Thevetia peruviana (Pers.) K. Schum in the Soconusco of Chiapas, Mexico **Leonardo Arévalo Monterrubio, Ma. Guadalupe Bustos-Vazquez, Hermilo Lucio-Castillo, Ivonne Torres-Acosta, Rodolfo Torres de los Santos**	
Preparation and characterization of green propolis granulates from Alagoas-Brazil **Salvana P. M. Costa, Mailde dos Santos, Lucas R. O. Silva, Kathylen V. F. dos Santos, Nataly C. S. Gama, Emanuel Silva Júnior, Matheus Guimarães, Monique A. Vila Nova, João Victor Oliveira, Arthur F. Borges, Jenifer M. D. de Freitas, Ticiano G. Nascimento**	
Investigating the correlation between the antioxidant and colour properties of honeys of different botanical origin **Rita Végh, Mariann Csóka, Éva Stefanovits-Bányai, László Sipos**	
The red propolis of Alagoas State/Brazil: A study of the production and value chain **Maria Tereza D'Ávila de Albuquerque, José Edmundo Accioly de Souza, Ticiano Gomes do Nascimento**	
Effectıveness of honey from bees Melipona beecheii and Melipona solani as alternative treatment for the healing of neuropathic diabetic foot ulcers in wagner stages I and II **Citlali Ibarias Toledo, Rodolfo Torres De los Santos, Guadalupe Bustos-Vázquez, Daniel Trujillo-Ramírez, José Reyes-Hernández, Xóchitl García-Casas, Ruiz Toledo Jovani**	
Amitraz residues in honey: A case study of Natural Park of Montesinho **Diana Rede, Virgínia Cruz Fernandes, Mónica Oliveira, Inês Casal, Cristina Delerue-Matos**	
Does robber bees have a higher potential for antimicrobial activity in their propolis? A case study with Lestrimelitta limao **Filippo Clava, Aline Negromonte dos Santos, Tiago Mauricio Francoy**	
Selection of strategies for voluntary engagement in the formulation of citizen science projects a suggestion for bee conservation projects	

Yan Victory dos Santos	
The functional study of honey bee (Apis mellifera) olfactory receptors that detect phenethyl acetate, which triggers hygenic behavior Seungha Lee, Dain Lee, Myeong-Lyeol Lee, Hyung Wook Kwon	
Overview of manufactured goods derived from stingless bees products in the Brazilian market Luana Ferreira Fedele, Celso Barbieri, Tiago Mauricio Francoy	
Behavioral dynamics of pollen storage in Melipona quadrifasciata Patrícia Miranda-Pinto, Michelle Manfrini Morais Vátimo	
Development of rapid test kit for pure honey kelulut Nurul Zafiqa Jefferi, Adibah Amir, Hadi Purwanto	
Trap-nests for stingless bees in an atlantic forest region Yuri Ribeiro Diogo, Beatriz S. Araujo, Patricia Miranda-Pinto, Lais Calpacci Araujo, Diego de J. Cerqueira, Juliana A. Quagliano, Tiago Mauricio Francoy, Michelle Manfrini Morais	
Acetolyzed and natural pollen preparations for melissopalynology Jorge Erique Moreno Patiño, David W. Roubik, Ortrud Monika Barth, Patricia Vit	
Determination of total phenol, total flavonoid amounts and antioxidant activity of commercial Turkish propolis extracts Süreyya Karaaslan, Miyase Çınar, Begüm Yurdakök Dikmen	
Stingless bee keepers group characterization from the west and south area of yucatan; future implementatıon of biotechnological innovation Dariana Zacarias Calzada, Julieta Grajales-Conesa, Yariely del Rocío Balam-Ballote, José Adrián Cimé-Pool, José Alfonso López-García, Víctor Albores-Flores, Danae Álvarez-Ruíz	
The phytochemical composition and antioxidant properties of bee-collected pollen originated from poppy (Papaverum somniferum) plant Aleksandar Ž. Kostić, Nebojša Nedić, Danijel D. Milinčić, Sofija Kilibarda, Sladjana P. Stanojević, Mirjana B. Pešić	
Aliphatic Organic Acids in Geotrigona, Melipona, and Scaptotrigona honeys: Potential markers of microbial associations with stingless bees Patricia Vit, Jane van der Meulen, Maria Diaz, Silvia RM Pedro, Isabelle Esperança, Rahimah Zakaria, Gudrun Beckh, Favian Maza	

INVITED ORAL PRESENTATION

Prof. Dr. Maria Graça Campos Therapeutic potential of pollen	
Prof. Dr. Ofélia Anjos Bee pollen as a healthy food and food ingredient	
Prof. Dr. Sibel Silici Functional effect of royal jelly and apilarnil on reproductive health	
Assoc. Prof. Dr. Meral Kekeçoğlu Is the honeybee venom an effective agent against cancer?	
Dr. Giovanni Cilia Use of honey bee (Apis mellifera) as a bioindicator for human, animals and plant diseases	
Assoc. Prof. Dr. Narimane Segueni Pharmacological properties, chemical composition and potential applications of Algerian propolis	
Prof. Dr. Sibel Silici Newly discovered probiotic product: Perga	
Assoc. Prof. Dr. Aleksandar Ž. Kostić Functional food properties- can bee pollen helps us?	
Dr. Otilia Bobiş (Senior researcher) Romanian propolis: past, present, and future directions. How geographical and botanical origin influence the chemical composition and bioactive properties	

Prof. Dr. Patricia Vit **Metabolomics applications in bee science: a suspected Starmerella yeast association with the stingless bee Scaptotrigona vitorum Engel, 2022**	
Dr. Wim Reybroeck (Senior Researcher) **Belgian Action limits for pesticides in beeswax to protect bee health**	
Assist Prof. Dr. Kresimir Matanovic **Integrated management of varroosis in European honey bee (Apis mellifera)**	
Dr. Anna Kurek-Górecka **Propolis as cariostatic agent and connection between oral cavity health and systemic diseases.**	
Prof. Dr. Hesham R. El-Seedi **Bees; small insects and big promises in pollination, food supply and medical innovation**	
Prof. Dr. Dharam P Abrol **Pollination of fruit crops-challenges and opportunities**	
Assist. Prof. Dr. Ali Timuçin Atayoğlu **Antioxidant potential in Apitherapy**	
Prof. Dr. Badiaa Lyoussi **" Physico chemical and biological functionalities of bee products " An approach that warrant clinical investigations**	
Dr. Norhasnida Zawawi **Unique Kelulut Factor? - A review of potential nutritional parameters for grading stingless bee honey.**	
Prof. Dr. Ticiano Gomes do Nascimento **Geographical Indication of Brazilian red propolis and the value chain and Bio-Economy (Beekeeping Economy) for the State of Alagoas-Brazil**	
Assoc. Prof. Dr. Mahir Murat Cengiz **Quality criteria in queens reared by commercial queens enterprises and their importance for Turkish beekeeping.**	
Prof. Dr. Pilar De la Rúa **Conserving honey bee diversity on islands: the case of the Canary Islands**	
Assoc. Prof. Dr. Dimitris Mossialos **Antimicrobial activity of bee products produced in Greece: the case of pine honey and bee bread (perga)**	
Dr. Ahmad Ali **Antiglycating and Antiaggregating properties of natural products from Honey**	
Dr. Anne BONJOUR-DALMON **Interactions of honey bee viruses with other stressors**	
Prof. Dr. Mircea Oroian **FT-IR spectroscopy, a promising tool for honey adulteration detection and prediction of physicochemical parameters**	
Prof. Dr. Sevgi Kolaylı **Biochemical and Physiochemical Properties of Turkish Forest Honeys**	

ORAL PRESENTATIONS

Poster Presentation

Antimicrobial Activity of Bee Bread

Tatjana Baltić[1], Sara Rajić[1], Ivana Branković Lazić[1], Vesna Đorđević[1], Branko Velebit[1], Mirjana Lukić[1], Jelena Ćirić[1]

[1]Institute of Meat Hygiene and Technology, 11000 Belgrade, Serbia

Corresponding author: tatjana.baltic@inmes.rs

Abstract:
Bee bread is natural honey bee product obtained from the fermentation of bee pollen mixed with honey bee saliva and flower nectar inside the honeycomb cells of a bee hive. Also, bee bread is defined as a functional food. Primarily, honey bees use bee bread for brood growing (nutrition), but humans use bee bread in apitherapy according to the bread's powerful healing properties and content of different molecules. Bee bread contains about 300 different substances, such as proteins, macro- and microelements, lipids, free amino acids, fatty acids (linoleic, linolenic and arachidonic), flavonoids, phenolic compounds, vitamins, and enzymes. Research on bee bread has been rather limited until now. In recent years, there is an increasing interest regarding the antimicrobial properties of bee bread, due to emerging antimicrobial resistance by different pathogenic microorganism. Different studies demonstrated that bee bread inhibited Gram positive and Gram negative bacteria, virus, yeast and parasite. The high antimicrobial activity of bee bread was correlated to the phenolic content. Phenolic compounds are defined as secondary plant metabolites with protective mechanism. They include a large number of phenolic acids, flavonoids, proanthocyanidins, etc. The main phenolic compounds determined in bee bread were quercetin followed by kaempferol, myricetin and luteolin. This review aims to present up to date research findings regarding antimicrobial activity of bee bread.

Keywords: honey bee products; bee bread; functional food; nutritional value; antimicrobial compounds.

[#]This paper was supported by the Ministry of Education, Science and Technological Development, Republic of Serbia (451-03-68/2022-14/200050 from 04.02.2022)