

*Bridging Training and Research  
for Industry and the Wider Community*

# **6<sup>th</sup> International ISEKI-Food Conference**



*“Sustainable Development Goals in Food Systems:  
Challenges and Opportunities for the Future”*

## **BOOK OF ABSTRACTS**

23 – 25 June, 2021

ONLINE

# **6<sup>th</sup> International ISEKI-Food Conference**

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## **Sustainable Development Goals in Food Systems: Challenges and Opportunities for the Future**

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### **BOOK OF ABSTRACTS**

#### **Editors**

Margarida Vieira, Paola Pittia, Cristina L.M. Silva,  
Florence Dubois-Brissonnet, Rui Costa  
Foteini Chrysanthopoulou

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### ISEKI-Food Association (IFA)



IFA is an independent European non-profit organisation, established in 2005 by university institutions, research institutes, companies and associations related to food, coming from all over the world.

Muthgasse 18, 1190 Vienna, Austria

<https://www.iseki-food.net>

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## #207: Effect of stirring and ultrasound-assisted extraction conditions in flavonoids, tannins, antioxidant and antimicrobial activities of chestnut outer shells (*Castanea sativa* Miller)

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procedures were used, specifically different solvents (water, ethanol:water (80:20) and acetone:water (80:20)) combined with two extraction methods (stirring and ultrasounds (US)) and times of extraction. Several chemical assays were applied to evaluate the flavonoids, hydrolysable and condensed tannins contents, and the antioxidant activity by total reducing capacity, 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity, and reducing power. Some individual compounds were identified by HPLC-UV detection. Furthermore, the antimicrobial activity of the obtained extracts was screened using different microorganisms, namely Gram-positive bacteria (*Staphylococcus aureus*, *Bacillus subtilis*, *Bacillus cereus*, *Enterococcus faecalis*) and Gram-negative bacteria (*Escherichia coli*, *Pseudomonas aeruginosa*, *Enterobacter aerogenes*, *Proteus mirabilis*, *Klebsiella pneumoniae*), as well as a fungi (*Candida albicans*).

The mixture acetone:water (80:20) was the best solvent to extract condensed tannins and flavonoids. It was with this mixture that the best total reducing capacity, DPPH radical scavenging activity and reducing power were observed. The highest extraction yield was also obtained with this mixture. Only for the hydrolysable tannins, the most suitable extraction solution was ethanol:water (80:20). The presence of gallic and tannic acids was detected by HPLC-UV.

Concerning the extraction methods, only the extracts obtained by the US exhibited antimicrobial activity. The ethanolic extract showed antimicrobial activity against the Gram-positive bacteria (*Staphylococcus aureus*, *Bacillus subtilis*, *Bacillus cereus*, *Enterococcus faecalis*) and the extracts obtained with acetone:water (80:20) and water showed antimicrobial activity against *Proteus mirabilis*.

The results of this study demonstrated that the chestnut outer shell is a promising source of bioactive compounds.

### **Keywords**

Bioactive compounds, Ethanol, Acetone, Water, Chestnut Shell

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## ***6<sup>th</sup> International ISEKI-Food Conference***

The general aim of the ISEKI-Food conference series is to contribute to the creation of an “open” international forum for researchers, education scientists, technologists and industry representatives, as well as food consumers, to promote constructive dialogue and collaboration on topics relevant to Food Science and Technology, Industry and Education and to present and disseminate the results of the activities developed by the ISEKI-Food network projects.

The topic of the 6<sup>th</sup> ISEKI-Food Conference was “*Sustainable Development Goals in Food Systems: Challenges and Opportunities for the Future*”. The conference aimed to promote a wide and constructive discussion on the current status and achievements of the SDGs.

**[www.iseki-food2020.isekiconferences.com](http://www.iseki-food2020.isekiconferences.com)**

### ISEKI Conferences

1<sup>st</sup> ISEKI-Food Conference, 10 - 12 September, 2008, Porto, Portugal

2<sup>nd</sup> ISEKI-Food Conference, 31 August - 2 September, 2011, Milan, Italy

3<sup>rd</sup> ISEKI-Food Conference, 21 - 23 May, 2014, Athens, Greece

4<sup>th</sup> ISEKI-Food Conference, 6 - 8 July, 2016, Vienna, Austria

5<sup>th</sup> ISEKI-Food Conference, 3 - 5 July, 2018, Stuttgart, Germany

6<sup>th</sup> ISEKI-Food Conference, 23 - 25 June, 2021, Online

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