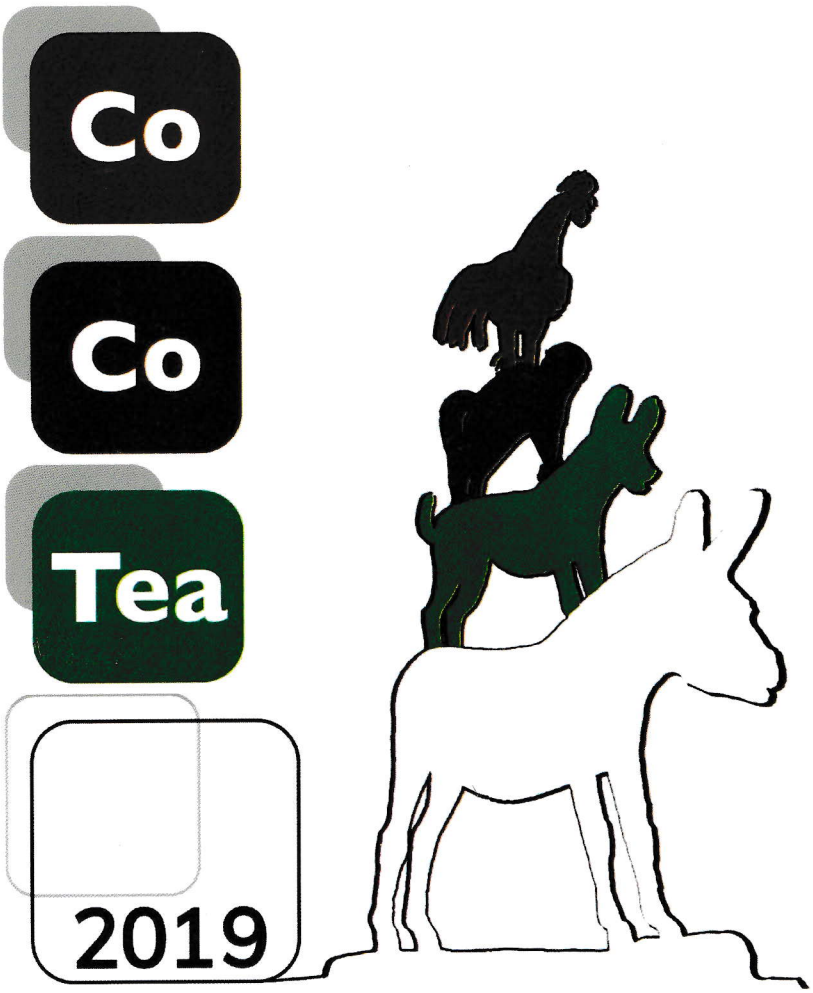
Book of Abstracts



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Coffee Poster 22

Identification of chlorogenic acid and lipid biomarkers for the differentiation of Arabica and robusta coffee beans

Sabur Badmos, Nikolai Kuhnert
Jacobs University Bremen, Jacobs University Bremen, Bremen, Germany

Coffea arabica and *Coffea canephora* (Robusta coffee) are the most commonly consumed coffee varieties globally. In this study, NMR and LC-ESI-MS^n techniques were employed to profile and quantify the most abundant chlorogenic acid in 54 different samples of the two coffee varieties from diverse origins of the world. Mono-caffeoyl quinic acids were found to show no variations if the two coffee varieties were compared. Significant variations were observed for feruloyl quinic acids, dicaffeoyl quinic acids and 5-sinapoylquinic acid. Additionally isomer ratios were explored as a potential marker for coffee authenticity along with a thorough statistical evaluation of rather extensive data set. Furthermore, the triacylglycerol constituents of the Arabica and Robusta coffee were profile to discriminate between the two coffee varieties by liquid chromatography coupled with mass spectrometry (LC/MS) and molecular ions fragmentation by tandem mass spectrometry (MS/MS). From the tandem-MS analysis, ammonium adducts [NH_4^+] of the TAGs were acquired and 18 TAGs were identified with their respective molecular weights and relative abundance (%) extrapolated from the data system with the aid of DAD detector. Some of these TAGs extracted from the coffee oil are being reported for the first time in this study and could be use to differentiate distinctly between the two coffee varieties.

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Development of a functional home-made beverage based on silverskin

Vittoria Fornero[1], Marta Bertolino[2], Daniela Ghirardello[2], Giuseppe Zeppa[2], Elena Calegari[1]
[1]Luigi Lavazza s.p.a., Torino, Italy, [2]Department of Agricoltural, Forestry and Food Sciences (DISAFA), University of Turin, Grugliasco (TO), Italy, Torino, Italy

Coffee is the most important food commodity in the world with 8.8 million tons of green coffee beans globally produced in 2015/2016. Currently, it is cultivated by 70 countries around the world, and for some of them, it represents the main agricultural export product. From the coffee cherry transformation into coffee brew a large amount of by-products are obtained but these materials contain appreciable amounts of bioactive compounds, mainly chlorogenic acids and antioxidant dietary fiber. Therefore, they represent an exciting opportunity to obtain new functional ingredients to be use as natural antioxidant, nutraceuticals, and preservatives in an enormous variety of food preparations with high nutritional value. Coffee silverskin (CS) is the thin tegument that cover the two green coffee beans and it represents the by-product coming from the roasting process. It represents about 4.2 % (w/w) of coffee beans hence, considering a production of 8.8 million tons of green coffee, a total of 0.37 million tons of CS is annually produced. This large amount of CS represents a great disposal cost for large-scale coffee roasters in consuming countries. Carbohydrates, ashes, proteins, fats and bioactive compounds such as chlorogenic acids, melanoidins and caffeine characterize the chemical composition of CS. In literature its use as structural, prebiotic, antioxidant, antimicrobial, anti-glycemic, anti-allergenic and anti-diabetic was then suggested. The aim of this work was to develop a home-made functional beverage using CS obtained by roasting process of Arabica, Robusta and decaffeinate beans. The beverages were prepared with two different dimension (250-500 µm and 1000-2000 µm) CS comparing four different home-made extraction techniques: infusion, moka, espresso and capsule. Obtained results shown that the better CS particle size was 250-500 µm and moka and infusion the best extraction techniques to get a beverage rich in polyphenols. Between the CS categories, decaffeinated CS beverages were the richest of all polyphenol compounds.

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Chemical and sensory perception of Robusta Coffees under wet processing

Emanuele Catarina da Silva Oliveira[1], **Marina Gomes de Castro**[1], Rogério Carvalho Guarçoni[2], Eustáquio Vinicius Ribeiro de Castro[3], Paulo Roberto Filgueiras[3], Danieli Grancieri Debona[1], Lucas Louzada Pereira[1]
[1]Federal Institute of Education, Science and Technology of Espírito Santo, Venda Nova do Imigrante, Brazil, [2]Capixaba Institute for TechnicalAssistance, Researchand Rural Extension, Venda Nova do Imigrante, Brazil, [3]Federal University of Espírito Santo, Vitória, Brazil