

Book of Abstracts



**Fifth International Conference on
Coffee, Cocoa and Tea**

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Sustainable recovery of cocoa bean shell for the production of a novel functional beverage with antioxidant and antidiabetic properties

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The reuse of food by-products within the frame of a circular economy is becoming crucial due to economical and environmental reasons. Cocoa bean shell (CBS) is a main by-product of cocoa industry, representing approximately 12% of the total bean[1]. CBS discard could be expensive and produce environmental problems. Besides, CBS represents a source of polyphenols and dietary fiber that could make it useful as food ingredient/additive. The high polyphenol content of CBS could also give it antidiabetic properties, which is of big interest considering that the WHO estimates that 422 million people worldwide were living with diabetes in 2014, and this number will double by 2030[2].

The purpose of this work was to develop and to optimize preparations for a new home-made functional beverage based on CBS.

Different types of beverage production techniques (Moka pot, Neapolitan flip coffee pot, French press, Espresso, Capsule and American coffee maker) used with CBS grinded at different degrees (ranging between 250 µm and 4 mm) were studied. The influence of these factors on the sensory characteristics and chemical composition of beverages was defined. The antioxidant capacity and the total phenolic, tannin and flavonoid content of the obtained beverages were determined with colorimetric assays and the polyphenols characterization was performed by HPLC-PDA analysis. Antidiabetic properties were determined with the α-glucosidase inhibition assay.

The various techniques and grinding degrees allowed to obtain several beverages with different chemical and sensory characteristics. Several compounds were identified and quantified by HPLC-PDA (phenolic acids, flavan-3-ols, quercetin-3-O-glycosides, catechin-3-O-glycosides and procyanidins). These compounds showed high correlation with the total phenolic content values (up to 1803.83 mg gallic acid equivalents/L), total flavonoid content (up to 566.42 mg catechin equivalents/L), total tannin content (up to 334.64 mg catechin equivalents/L), antioxidant capacity (up to 7.29 mmol Trolox equivalents/L) and antidiabetic properties (up to 52.0% of α-glucosidase inhibition) displayed.

The CBS could therefore represent an optimal ingredient for the production of functional beverages with potential health benefits for the consumers, reducing the environmental and economic impact of the by-product disposal.

References:

[1] EFSA, (2008), 1-66 | [2] World Health Organization, Global Report on Diabetes 2016

Oral Session Cocoa 09.07

German cacao of Cameroon - new facts on a traditional variety fallen into oblivion

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"German" cacao cultivated in Cameroon has emerged from a mixture of different gene pools with a large proportion of Trinitario and with a pronounced content of polyphenols. In order to characterize this old genotype, polyphenols and polyphenol oxidase were compared with hybrid selected genotypes. Epicatechin (25 mg/g - 52 mg/g fat free dm) and catechin (0.5 - 1.9 mg/g fat free dm) content of German cacao seeds were of similar range with hybrid investigated samples. German cacao is characterized by its high content of anthocyanins especially cyanidine-3-arabinside which ranges from 8.84 mg/g to 17.51 mg/g fat free dm. Hybrid genotypes displayed 1 mg/g to 6.4 mg/g fat free dm of cyanidine-3-arabinside. PPO activity was 10 to 20-fold higher in German cacao seeds compared to hybrid. Anthocyanin and PPO through the oxidation of phenols to quinone are involved in colour development and pests and diseases resistance. Pigment is one of the most important factors for the colour of cocoa powder. We discuss the high content of anthocyanin and PPO activity in German cacao in relation with the reddish colour of cocoa powder derived from Cameroonian cacao.

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FIFTH INTERNATIONAL CONFERENCE ON COCOA COFFEE AND TEA 2019

CERTIFICATE OF ATTENDANCE

Olga Rojo-Poveda

attended and gave a lecture at the Cocoa, Coffee and Tea Conference 2019

from 26.06 to 28.06.2019 in Bremen, Germany.

Prof. Dr. Nikolai Kuhnert (Conference Chariman)
Jacobs University Bremen gGmbH