

Cold atmospheric plasma assisted extraction of bioactive components from cocoa shell

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Cold Atmospheric Plasma Assisted Extraction (CAPAE) or high voltage electrical discharge is a technology gaining vast attention in terms of application on different plant materials and falls into the group of Green Extraction Techniques.

The present study focused on the application of CAPAE to recover some bioactive components from cocoa shell – a by-product obtained from chocolate industry “Kandit” Osijek (Croatia). Different extraction time (30, 60, 90 min), frequency (40, 70, 100 Hz) and solid-solvent ratio (10, 30 and 50 mL/g) of CAPAE were used to obtain cocoa shell extracts. Some bioactive components, namely methylxanthines and phenolic components were measured in obtained extracts by high-pressure liquid chromatography with diode array detector.

Results showed that different extraction parameters has significant influence on cocoa shell composition. Theobromine, caffeine and gallic acid were the most abundant in all cocoa shell extracts. Significant amounts of specific bioactive components from cocoa shell obtained with one of the newest green technologies today, CAPAE, have shown that this by-product can be successfully used in the production of extracts rich in bioactive components.

Keywords: cocoa shell, by-product, extraction, bioactive components

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