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BOOK OF ABSTRACTS

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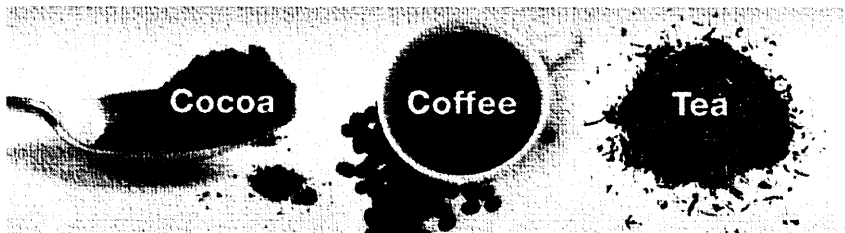
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Classification of cocoa bean shell from different regions of Venezuela based on volatile fingerprint

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Cocoa bean shells (CBS) is one of the main by-products of the cocoa roasting process, which represents 10% of total weight after the husking and grinding. CBS is a source of dietary fibre and polyphenols and therefore has a great potential to be used as food additives/ingredients. As for cocoa beans, the study of volatile constituents of CBS is very important to define the quality and the flavour of the end product.

The aim of this study was to discriminate CBS obtained from cocoa beans collected in different geographical areas of production in Venezuela using their volatile constituents. Analysis of 12 CBS samples from six different cocoa-growing regions of Venezuela was performed using headspace solid-phase microextraction coupled with gas cromatography-mass spectrometry (HS-SPME–GC-MS). More than 60 components (aldehydes, ketones, sulphur compounds, esters, hydrocarbons, furan derivates, pyrazines, alcohols, acids, pyrroles, benzenoids and terpenes) were detected and semi-quantified using an internal standard. Adonis and Anosim statistical tests showed significant differences among regions and variety of cocoa beans ($P < 0.001$). Differences between the groups were further demonstrated by principal component analysis (PCA). VOCs characteristic of each group drove the sample clustering according to regions and variety. Among the volatiles compounds, ketones were found to be highly correlated with samples from Merida region, aldehydes with samples from Ocumare region and esters with samples from Sur del Lago region.

The results highlight that variety and geographical area affect also the flavour characteristics of cocoa bean shell and therefore volatile profile constitute a suitable analytical approach to classify CBS.