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BOOK OF ABSTRACTS

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Determination of volatile compounds in carob powders by HS-SPME- GC–MS

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Carob pulp (*Ceratonia siliqua*) is a promising alternative to cocoa due to its similar sensory attributes and greater environmental sustainability. As a drought-resistant Mediterranean leguminous plant, carob requires fewer resources for cultivation compared to cocoa, making it an attractive option for alternative chocolate products. Despite its potential, few studies have characterized its volatile profile, which is essential for its application as a cocoa substitute. In this study, carob pulp powders were fermented using different microorganisms or alkalized, and subsequently roasted at 120°C and 150°C, with the aim of obtaining a volatile profile as close as possible to that of cocoa bean powder. The volatile organic compound (VOC) profiles were analyzed by headspace solid-phase microextraction gas chromatography–mass spectrometry (HS-SPME-GC-MS) and compared to cocoa powder as a reference. Gas chromatography–mass spectrometry is a valid technique for analyzing volatile organic compounds in food. It allows the study of food flavour and the assessment of its quality. To identify a suitable method for the analysis of carob volatile compounds, we developed a headspace solid-phase microextraction (HS-SPME) protocol. We used a targeted approach to monitor key odorants in carob powder samples, using aqueous samples. In this study we investigated the impact of different roasting temperatures and fermentation processes. This study demonstrates the feasibility of GC-MS for characterizing the carob volatilome. The next step of the study will be the comparison of the volatilome profile with sensory profiling of the processed chocolate obtained with the carob pulp powders.