



Analysis of volatile odor compounds in dark roasted Arabica coffee beans from Chiang Rai by using solid phase microextraction- gas chromatography-mass spectrometry

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Volatile odor compounds of ground dark roasted Arabica coffee beans from Chiang Rai province were extracted by using solid phase microextraction (SPME) prior analysis by gas chromatography-mass spectrometry. Three fibers with different polarity including divinylbenzene/carboxen/polydimethylsiloxane (DVB/CAR/PDMS), polydimethylsiloxane (PDMS) and carboxen/polydimethylsiloxane (CAR/PDMS) were investigated for extraction of volatile odor constituents. Fifteen low polar compounds were detected with PDMS fiber. The key odor volatiles were sotolone, decanal and cis-pinocarvyl acetate, while twenty high polar constituents were found when using CAR/PDMS fiber with the major compounds of indole, 2-furanmethanol, sotolone and acetic acid. For DVB/CAR/PDMS fiber which can be extracted with board range of chemical compounds, twenty-eight compounds were investigated. The major volatiles were 2-furanmethanol, sotolone, larixinic acid and 2-furancarboxaldehyde. Different amounts of volatile odor components of ground dark roasted Arabica coffee beans from Chiang Rai were related to chemical composition on each fiber. The DVB/CAR/ PDMS fiber was considered to be the best fiber for extraction of odor volatiles of ground roasted Arabica coffee beans due to the highest number of detected volatile components compared to other fibers. It is noted that the solid phase microextraction technique is more sensitive to extract the volatile components which played the significant role as the key scent in dark roasted Arabica coffee beans.

Keywords: Arabica coffee; Chiang Rai; DVB/CAR/PDMS; GC-MS; SPME