



Analysis of volatile compounds in peel of grapefruit by use of headspace solvent microextraction and gas chromatography

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Headspace single drop microextraction normally extracts analytes into a droplet of water immiscible extracting solvent attached at a syringe needle [1]. HS-SDME is an inexpensive and rapid technique, which uses practically no solvent and eliminates the possible memory effects, because new solvent drop is used every time [2].

Parameters that have been considered for SDME include the following: size of drop; shape of needle tip; temperature of sampling; equilibration time; sampling (extraction) time; effect of stirring and ratio of headspace volume to sample volume [3].

A vial with a stir bar was placed on a magnetic stirrer and maintained at a desirable temperature by a water bath. During the extraction, the microsyringe was fixed above the extraction vials with a septum. After the needle passed through the septum, the needle tip must keep above the surface of sample solution (1g white grapefruit (*Citrus paradise*)). The headspace volume was 25ml. Then 1 μ L extraction solvent (n-Hexadecane) was extruded out of the needle and kept suspending at the needle tip. When the extraction was finished (after 33 minutes), the drop was retracted into the needle and injected directly into the GC inlet. The extraction temperature was 25 °C. The most compounds of grapefruit peel were D-Limonene (96.32%), Beta-Myrcene (1.92 %), Alpha-pinene (0.56 %), Beta-pinene (0.53 %).

References:

1. Chen, Y.; Guo, Z.; Wang, X.; Qiu, C. *Journal of Chromatography A*. **2008**, 1184, 191–219.
2. Hakkarainen, M. *J. Biochem. Biophys. Methods*. **2006**, 70, 229–233.
3. Wood, D.; Miller, J.; Christ, I. *Sample Preparation Perspectives*. **2004**, 17, 573–579.

