



***METHOD OPTIMIZATION TO DETECT 2- METHYL ISOBORNEOL (2-
MIB) IN WATER BY GAS CHROMATOGRAPHY-MASS
SPECTROMETRY (GC
/MS) USING SOLID-PHASE MICRO EXTRACTION
(SPME)***

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2- Methyl isoborneol (2- MIB) is a key compound which causes off flavors in water. Despite no recorded health hazards, water consumers reject the water with 2- MIB due to its unpleasant musty odour and taste. The aim of this study was to optimize a method to detect and quantify 2- MIB for the first time in Sri Lanka. Human olfactory system detects the 2- MIB at the minimum of $\square 5$ ng l⁻¹. A method for the determination of 2- MIB in water by head space solid-phase micro extraction (HS-SPME) is presented. Various SPME fiber types have been tested for 2- MIB extraction efficiency from water. Medium polar SPME fiber (divinylbenzene/carboxen / polydimethylsiloxane (DVB/CAR/PDMS) microfiber with film thickness 50 μ m) proved to be the most efficient for 2- MIB extraction as 2- MIB is a semi volatile odorous compound. Extraction conditions including the extraction time, sample volume and temperature were optimized. The best sample size found to be 10 ml and the optimum extraction time is 15 min and the best extraction temperature is 40 °C. Use of 3.0 g of Sodium Chloride (NaCl) found to be the best salting out agent. Fiber desorption was carried out at 270 °C for 5 minutes at the GC injection port. Injection port was operated in pulsed splitless mode and Helium was used as the carrier gas at a flow rate of 1.1 ml/min. Mass spectrometer was operated under as electron ionization mode at 70 eV. The selected ion for the quantification of 2- MIB was of m/z 95 (Base peak) which gave the most prominent peak. Solid-phase micro extraction integrates sampling, extraction, concentration and sample introduction into a single solvent-free step and analytes in the sample are directly extracted and concentrated to the extraction fiber. The optimized method is a cost effective and saves sample preparation time.

Keywords: 2- MIB, off flavors, Semi volatile, Solid-phase micro extraction (SPME), Optimize