Determination of 242 Organic Compounds in Fog Water by GC-MS, GC-MS/MS, and LC-MS/MS

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Although fog water is known by its higher concentrations compared to rain water, the extraction and analysis of organic matters from these matrices are still very limited. A new analytical method known as solid-phase extraction (SLE) is developed, optimized, and validated for the simultaneous analysis of a large number of organic compounds in fog water in one matrix. The extraction is based on the SLE procedure which allows the extraction of organic compounds on a solid support. SLE coupled with gas chromatography- mass spectrometry (GC-MS), gas chromatography- tandem mass spectrometry (GC-MS/MS), and liquid chromatography- tandem mass spectrometry (LC-MS/MS) enables the extraction of 242 organic compounds including phenols, acids, pesticides, and *PAHs/PCBs/OCPs*. The method is developed, optimized, and then validated for its linearity, recovery, precisions, limit of detection (LOD), and limit of quantification (LOQ). After that, it is applied on real fog samples collected from Lebanon and Alsace. The results reveal the persistence of many organic compounds in both countries, and the necessity to perform further fog analysis.