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PII: S0021-9673(18)31080-X
DOI: https://doi.org/10.1016/j.chroma.2018.08.060
Reference: CHROMA 359656

To appear in: *Journal of Chromatography A*

Received date: 29-6-2018
Revised date: 29-8-2018
Accepted date: 30-8-2018

Please cite this article as: Naing NN, Lee HK, Determination of glyoxal and methylglyoxal in atmospheric fine particulate matter by vortex-assisted micro-solid phase extraction and liquid chromatography-diode array detection, *Journal of Chromatography A* (2018), https://doi.org/10.1016/j.chroma.2018.08.060

**Determination of glyoxal and methylglyoxal in atmospheric fine particulate matter by vortex-assisted micro-solid phase extraction and liquid chromatography-diode array detection**

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Highlights

- Glyoxal and methylglyoxal in atmospheric fine particulate matter were determined.
- VA-μ-SPE using C18 sorbent followed by LC-DAD was carried out.
- On-sorbent derivatization by 2,4-DNPH and extraction was performed in one step.
- The procedure showed good extraction efficiency for these two analytes.

Abstract

Determination of α-dicarbonyl compounds, glyoxal (Gly) and methyl glyoxal (Mgly), in atmospheric fine particulate matter $PM_{2.5}$ (particulate matter with an aerodynamic diameter of less than 2.5 μm) which play vital roles in generating secondary organic aerosols in the ambient air, was carried out by vortex-assisted micro-solid phase extraction (VA-μ-SPE)-liquid chromatography-diode array detection (LC-DAD), with on-sorbent derivatization by 2,4-dinitrophenylhydrazine (DNPH). This is the first time such an approach of combining on-sorbent derivatization and extraction in one step together with LC analysis has been applied to