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**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- $\mu$ -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  $\alpha$ -dicarbonyl compounds, glyoxal (Gly) and methyl glyoxal (Mgly), in atmospheric fine particulate matter PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of less than 2.5  $\mu$ m) which play vital roles in generating secondary organic aerosols in the ambient air, was carried out by vortex-assisted micro-solid phase extraction (VA- $\mu$ -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

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