

Supporting Information for “Measurements of Oxalic Acid, Oxalates, Malonic Acid and Malonates in Atmospheric Particulates”

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This supporting document consists of two sections (total 18 pages): (1) Literature classified in Table 1, and (2) Limit of detection (LOD) of measuring standard oxalic and malonic acids using IC vs. GC-MS.

S1. Literature Classified in TABLE 1

1.1 Footnote “d” (67 articles)

Note that some studies used methanol to wet filters before water extraction, and some studies only reported oxalic acid without measuring malonic acid.

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1.2 Footnote “e” (13 articles)

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1.3 Footnote “f” (35 articles)

More than 8 types of organic solvents were employed to extract DCAs from filter samples; dichloromethane and methanol are most frequently used. Some studies used solvent and water extraction. Certain studies reported that oxalic acid could not be identified, unlike malonic acid.

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S2. Limit of detection (LOD)^a of oxalic acid, malonic acid, oxalate and malonate using IC vs. GC-MS

Standards	IC analysis (ppm)	GC-MS analysis (ppm)
Oxalic acid	0.045	2.5
Malonic acid	0.12	1.1
Disodium oxalate	0.11	ND ^b
Disodium malonate	0.19	ND ^b

^aLOD is calculated from $S/N = 3$ based on triplicate tests. ^bND: not detected. ^cAll calculations are based on the method of Miller and Miller (*Statistics and chemometrics for analytical chemistry*, 4th ed. Prentice Hall: New York, p.121–124, 2000.)