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Supplementary Information

**Table S1.** GC/MS retention time and fragment ions of derivative compounds of the oxygenated organic compounds.

| Compound | **RT (min)** | **Fragment ions** |
|---|---|---|
| diC4 | 4.53 | 115,55,59 |
| BEN | 5.55 | 105,77,136 |
| diC5 | 6.32 | 100,59,129 |
| TOL | 7.98 | 119,91,150 |
| diC6 | 8.59 | 114,59,101 |
| MAL | 9.18 | 89,73,175 |
| diC7 | 11.33 | 115,74,55 |
| 3HGA | 11.75 | 127,89,73 |
| PA | 13.06 | 114,83,69 |
| KPA | 13.29 | 95,109,153 |
| diC8 | 14.19 | 129,138,74 |
| PH | 14.40 | 163,77,164 |
| TART | 14.88 | 73,147,234 |
| PNA | 15.09 | 100,58,99 |
| tPH | 15.52 | 163,135,194 |
| iPH | 15.97 | 163,135,194 |
| diC9 | 17.05 | 152,74,55 |
| CIT | 17.46 | 215,231,89 |
| MTL1 | 17.93 | 219,73,147 |
| diC10 | 19.81 | 74,55,125 |
| LEV | 22.03 | 204,217,73 |
| TRIM | 24.82 | 221,222,162 |
| C16 | 26.88 | 74,87,143 |
| C17 | 29.25 | 74,87,143 |
| C18:1 | 30.87 | 55,69,74 |
| C18 | 31.78 | 74,87,143 |
| Tetracosane d-50 | 36.01 | 66,82,50 |

**Table S2.** Retention time and m/z data used for other compounds without available reference standards.

| Compound | **RT** | ***m/z* used for identification** | **Reference** |
|---|---|---|---|
| 2-MGA | 10.95 | 73,219,147 | (Szmigielski et al. 2007b) |
| 2-HGA | 12.01 | 127,89,73 | (Flores and Doskey 2015), NIST |
| MBTCA | 15.36 | 85,155,114 | (Shen et al. 2015; Szmigielski et al. 2007a) |
| MTL2 | 17.32 | 219,73,147 | (Claeys et al. 2004) |

**Table S3.** Diagnostic mass ratios of Ph/diC$_9$ and diC$_6$/diC$_9$ in comparison with other studies.

| Location | Ph/diC$_9$ | diC$_6$/diC$_9$ | Particle size | Time | Reference |
|---|---|---|---|---|---|
| Limassol, Cyprus | 1.4 | 1.2 | $PM_{2.5}$ | July-August 2018 | This study |
| Agia Marina Xyliatou, Cyprus | 0.57 | 0.67 | $PM_{2.5}$ | July-August 2018 | This study |
| San Pietro, Italy | 0.96 | 0.38 | $PM_{2.5}$ | Winter 2013 | Pietrogrande et al., 2014 |
| Jeju Island, South Korea | 1.1 | 1.07 | TSP | Summer 2003 | Kundu et al., 2010 |
| Vavihill, Sweden | 0.40 | 0.54 | $PM_{10}$ | April 2008 - March 2009 | Hyder et al., 2012 |
| Morogoro, Tanzania | 0.71 | 1.01 | $PM_{2.5}$ | Dry season 2011 | Mkoma and Kawamura, 2013 |
| Hong Kong, roadside | 6.50 | 0.90 | $PM_{2.5}$ | Summer, winter 2003 | Ho et al., 2006 |
| Wuhan, China | | 1.89 | $PM_{2.5}$ | Winter 2011-2012 | Guo et al., 2015 |

**Table S4.** Correlations between aromatic acids in LIM.

| | LEV | PH | TRIM | tPH | iPH | BEN | TOL |
|---|---|---|---|---|---|---|---|
| LEV | 1 | | | | | | |
| PH | .374* | 1 | | | | | |
| TRIM | .440* | .720* | 1 | | | | |
| tPH | .695* | .360 | .251 | 1 | | | |
| iPH | .082 | .580* | .322 | .348* | 1 | | |
| BEN | .363 | .947* | .725* | .330 | .543* | 1 | |
| TOL | .712* | .411* | .341 | .719* | .080 | .506* | 1 |

*** Correlation is significant at the 0.05 level.**

**Table S5.** Correlations between aromatic acids in AGM.

| | LEV | PH | TRIM | tPH | iPH | BEN |
|---|---|---|---|---|---|---|
| LEV | 1 | | | | | |
| PH | .228 | 1 | | | | |
| TRIM | .195 | .734* | 1 | | | |
| tPH | .700* | .330 | .357 | 1 | | |
| iPH | .508* | .347 | .296 | .841* | 1 | |
| BEN | .065 | .837* | .559* | .287 | .317 | 1 |

*** Correlation is significant at the 0.05 level.**

**Table S6.** Correlations between each individual HA with PSOA, MTLs, ΣdiC4-diC6 and ΣdiC8-diC10, in AGM.

| | MAL | 2HGA | TAR | CIT | PSOA | MTLs | ΣdiC4-diC6 | ΣdiC8-diC10 |
|---|---|---|---|---|---|---|---|---|
| MAL | 1 | | | | | | | |
| 2HGA | .500* | 1 | | | | | | |
| TAR | .070 | .211 | 1 | | | | | |
| CIT | .287 | .323 | .717* | 1 | | | | |
| PSOA | .720* | .525* | .064 | .180 | 1 | | | |
| MTLs | .010 | .178 | .767* | .650* | .030 | 1 | | |
| ΣdiC4-diC6 | .112 | .130 | .414 | .560 | .221 | .442 | 1 | |
| ΣdiC8-diC10 | .454 | .780* | .353 | .408 | .527 | .160 | .179 | 1 |

***Correlation is significant at the 0.05 level.**

**Table S7.** Correlations between each individual HA with PSOA, MTLs, ΣdiC4-diC6 and ΣdiC8-diC10, in LIM.

| | MAL | 2HGA | TAR | CIT | PSOA | MTLs | ΣdiC4-diC6 | ΣdiC8-diC10 |
|---|---|---|---|---|---|---|---|---|
| MAL | 1 | | | | | | | |
| 2HGA | .614* | 1 | | | | | | |
| TAR | .661* | .827* | 1 | | | | | |
| CIT | .605* | .745* | .695* | 1 | | | | |
| PSOA | .342 | .531* | .504 | .242 | 1 | | | |
| MTLs | -.057 | .128 | .029 | .049 | .139 | 1 | | |
| ΣdiC4-diC6 | .675* | .667* | .566* | .699* | .446 | .210 | 1 | |
| ΣdiC8-diC10 | .553* | .618* | .642* | .782* | -.003 | .088 | .611* | 1 |

***Correlation is significant at the 0.05 level.**

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