ESI Table S1. Two-level fractional factorial design for the determination of significant variables for the extraction of DCAs by ASE

| Levels | Factors | | | | | |
|---|---|---|---|---|---|---|
| | (1)[a] | (2) [b] | (3)[c] | (4)[d] | (5)[e] | |
| -1 | 100 | 1000 | 1 | 60 | 40 | |
| +1 | 150 | 3000 | 8 | 100 | 300 | |
| Run number | | | | | | Experimental response[f] |
| 1 | - | - | - | - | + | 96% |
| 2 | + | - | - | - | - | 99% |
| 3 | - | + | - | - | - | 96% |
| 4 | + | + | - | - | + | 107% |
| 5 | - | - | + | - | - | 101% |
| 6 | + | - | + | - | + | 104% |
| 7 | - | + | + | - | + | 102% |
| 8 | + | + | + | - | - | 117% |
| 9 | - | - | - | + | - | 103% |
| 10 | + | - | - | + | + | 108% |
| 11 | - | + | - | + | + | 102% |
| 12 | + | + | - | + | - | 107% |
| 13 | - | - | + | + | + | 100% |
| 14 | + | - | + | + | - | 105% |
| 15 | - | + | + | + | - | 103% |
| 16 | + | + | + | + | + | 109% |

[a]temperature in °C; [b]pressure in psi; [c]static extraction time in minutes; [d]flush volume in %; [e]purge time in seconds; [f]mean recovery of 9 selected target compounds (see text)

ESI Table S2. Recovery of DCAs

| Analyte (abbreviation) | Spiked mean (µg) | Found mean (µg) | Recovery mean (%) | RSD (%, n=6) |
|---|---|---|---|---|
| Cis butenedioic acid (cis$C_4$) | 0.805 | 0.951 | 118 | 11.4 |
| Trans butenedioic acid (trans$C_4$) | 0.582 | 0.711 | 122 | 3.2 |
| Butanedioic acid ($C_4$) | 0.681 | 0.797 | 117 | 12.2 |
| Methylpropanedioic acid (i$C_4$) | 0.471 | n.d. | | |
| Pentanedioic acid ($C_5$) | 0.495 | 0.526 | 106 | 18.0 |
| Methylbutanedioic acid (i$C_5$) | 0.681 | 0.669 | 98 | 12.9 |
| Hexanedioic acid ($C_6$) | 0.322 | 0.301 | 94 | 9.1 |
| 2-Methylpentanedioic acid (i$C_6$) | 0.396 | 0.391 | 99 | 3.8 |
| Phthalic acid (Ph) | 0.533 | 0.468 | 88 | 9.3 |
| Heptanedioic acid ($C_7$) | 0.533 | 0.459 | 86 | 4.7 |
| Isophthalic acid (iPh) | 0.421 | 0.417 | 99 | 8.9 |
| Octanedioic acid ($C_8$) | 0.235 | 0.201 | 85 | 10.2 |
| Nonanedioic acid ($C_9$) | 0.272 | 0.256 | 94 | 6.9 |
| Decanedioic acid ($C_{10}$) | 0.198 | 0.147 | 74 | 9.5 |
| Undecanedioic acid ($C_{11}$) | 0.186 | 0.151 | 81 | 6.0 |

n.d.: not detected (below LOD)