

**ESM 1.** Table. Iron content in supernatants of digestion solutions (organic acids with iron) in the absence of AA (pH=7.0)

| Item      | Molar Ratio | Iron content<br>in digestive<br>supernatant<br><br>mg/L | Item       | Molar<br>Ratio | Iron content<br>in digestive<br>supernatant<br><br>mg/L |
|-----------|-------------|---------------------------------------------------------|------------|----------------|---------------------------------------------------------|
| PA:Fe(II) | 0:1         | 0.87 ± 0.05                                             | PA:Fe(III) | 0:1            | 0.35 ± 0.01                                             |
|           | 1:1         | 0.85 ± 0.03                                             |            | 1:1            | 0.39 ± 0.01                                             |
|           | 3:1         | 0.82 ± 0.03                                             |            | 3:1            | 0.53 ± 0.02                                             |
|           | 5:1         | 0.84 ± 0.05                                             |            | 5:1            | 0.60 ± 0.03                                             |
|           | 10:1        | 0.83 ± 0.01                                             |            | 10:1           | 0.72 ± 0.05                                             |
| SO:Fe(II) | 0:1         | 0.90 ± 0.07                                             | SO:Fe(III) | 0:1            | 0.31 ± 0.01                                             |
|           | 1:1         | 0.83 ± 0.04                                             |            | 1:1            | 0.30 ± 0.02                                             |
|           | 3:1         | 0.76 ± 0.02                                             |            | 3:1            | 0.22 ± 0.01                                             |
|           | 5:1         | 0.53 ± 0.02                                             |            | 5:1            | 0.18 ± 0.00                                             |
|           | 10:1        | 0.54 ± 0.03                                             |            | 10:1           | 0.23 ± 0.00                                             |
| SS:Fe(II) | 0:1         | 0.89 ± 0.01                                             | SS:Fe(III) | 0:1            | 0.34 ± 0.06                                             |
|           | 1:1         | 0.56 ± 0.04                                             |            | 1:1            | 0.40 ± 0.02                                             |
|           | 3:1         | 0.48 ± 0.02                                             |            | 3:1            | 0.42 ± 0.03                                             |
|           | 5:1         | 0.52 ± 0.01                                             |            | 5:1            | 0.36 ± 0.04                                             |
|           | 10:1        | 0.56 ± 0.02                                             |            | 10:1           | 0.41 ± 0.03                                             |

AA: Ascorbic acid; PA: phytic acid; SO: sodium oxalate; SS: sodium silicate.