Table S2**.** **Upper and lower bounds for kinetic orders.**

|  |  |  |
| --- | --- | --- |
| Kinetic order (*f*enzyme, substrate/regulator) | Lower bound | Upper bound |
| *f*CCR2, caffeoyl CoA | 0 | 2a |
| *f*CCoAOMT, caffeoyl CoA | 0 | 1b |
| *f*COMT, caffeyl aldehyde | 0 | 1 |
| *f*COMT/F5H, caffeyl aldehyde | 0 | 1 |
| *f*CCR1, feruloyl CoA | 0 | 1 |
| *f*CCR1/CAD, feruloyl CoA | 0 | 1 |
| *f*CAD, coniferyl aldehyde | 0 | 1 |
| *f*F5H, coniferyl aldehyde | 0 | 1 |
| *f*Tr, coniferyl alcohol | 1c | 1 |
| *f*F5H, coniferyl alcohol | 0 | 1 |
| *f*COMT, 5-hydroxy coniferyl aldehyde | 0 | 1 |
| *f*Tr, 5-hydroxy coniferyl alcohol | 1c | 1 |
| *f*COMT, 5-hydroxy coniferyl alcohol | 0 | 1 |
| all kinetic orders for activators | 0 | 2 |
| all kinetic orders for inhibitors | -2 | 0 |

aCCR2 shows positive cooperativity towards caffeoyl-CoA [2]

bA kinetic order of 0 corresponds to a Michaelis-Menten process where the enzyme is saturated, and a kinetic order of 1 describes the situation in which the substrate concentration is negligibly small compared to the Michaelis constant *K*M [6].

cThe transport process (Tr) is assumed to be first order