Electronic Supplementary Information (ESI) for

Kinetics of iron oxidation upon polyphenol binding

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Table of Contents

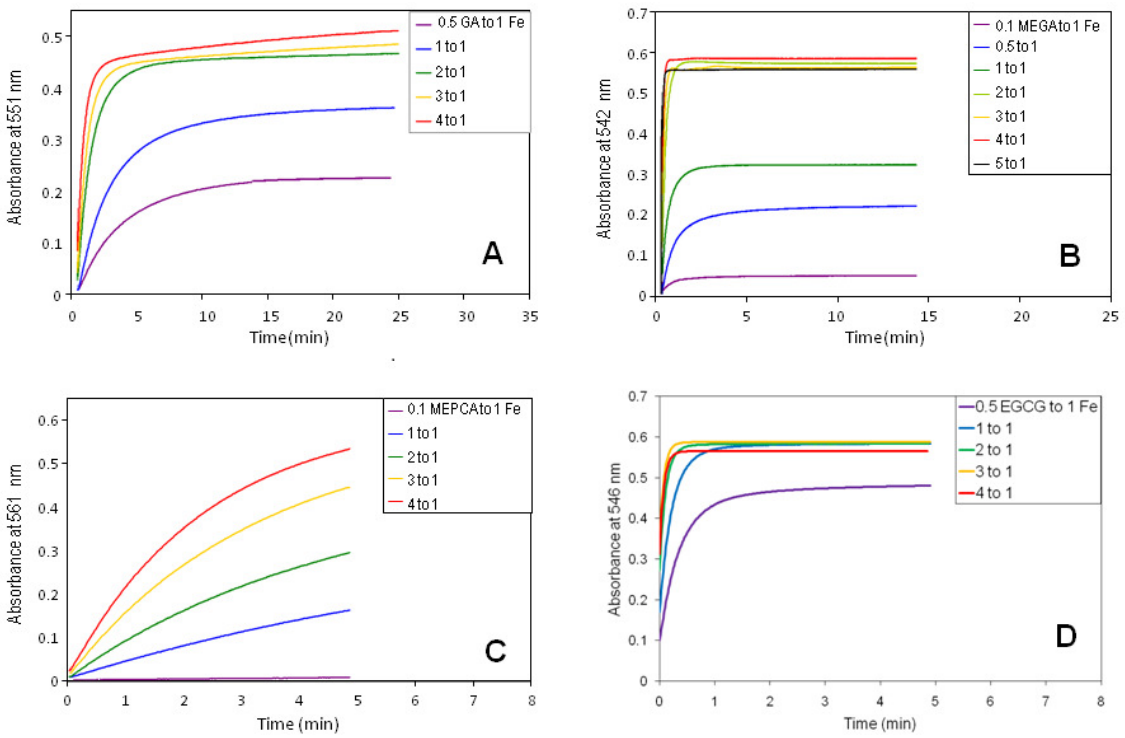

Fig. S1 Absorbance vs. time graphs for variation of A) gallic acid (GA) to Fe^{2+} molar ratio; B) methyl 3,4,5-trihydroxybenzoate (MEGA) to Fe^{2+} molar ratio; C) methyl 3,4-dihydroxybenzoate (MEPCA) to Fe^{2+} molar ratio; and D) (-)-epigallocatechin-3-gallate (EGCG).

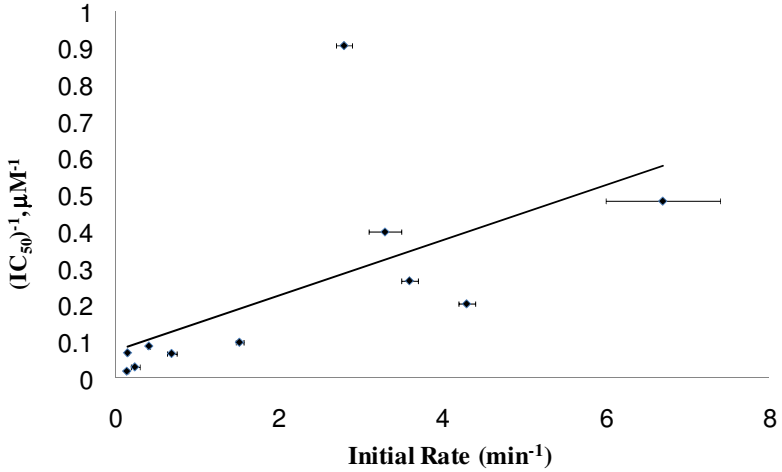

Fig. S2 A graph showing the relationship between initial rate and IC_{50} values for all eleven compounds (solid line, $R^2 = 0.35$). Error bars for rates are the standard deviations from three experiments.

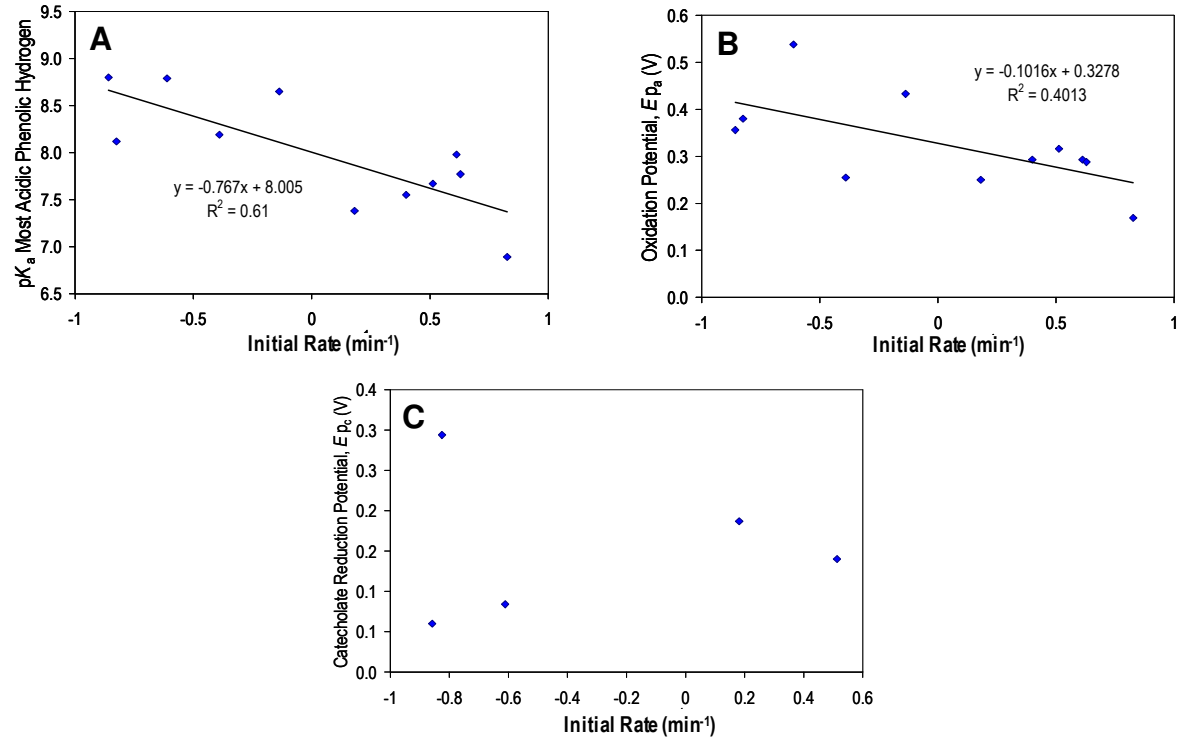

Fig. S3 Plots of initial rate as a function of A) polyphenol pK_a (most acidic phenolic hydrogen); B) polyphenol oxidation potential (Ep$_a$); and C) catecholate compound reduction potential (Ep$_c$).

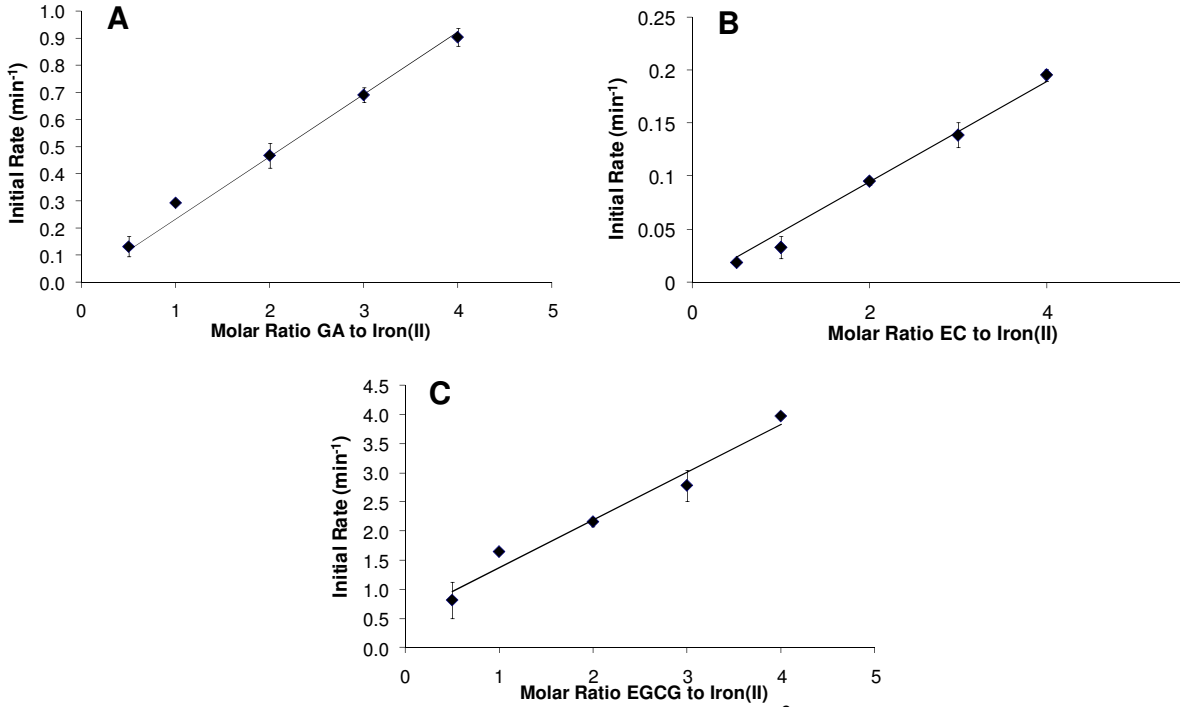

Fig. S4 Graphs showing the linear relationship between Fe^{2+} oxidation reaction rate and concentration of A) gallic acid (GA; y = 0.2306x); B) epicatechin (EC; y = 0.0473x); and C) (-)-epigallocatechin-3-gallate (EGCG; y = 0.8204x + 0.5499). For all compounds, Fe^{2+} autooxidation is first order with respect to polyphenol ligand (solid line, R^2 = 0.99, 0.99, and 0.97, respectively). Error bars represent standard deviations.

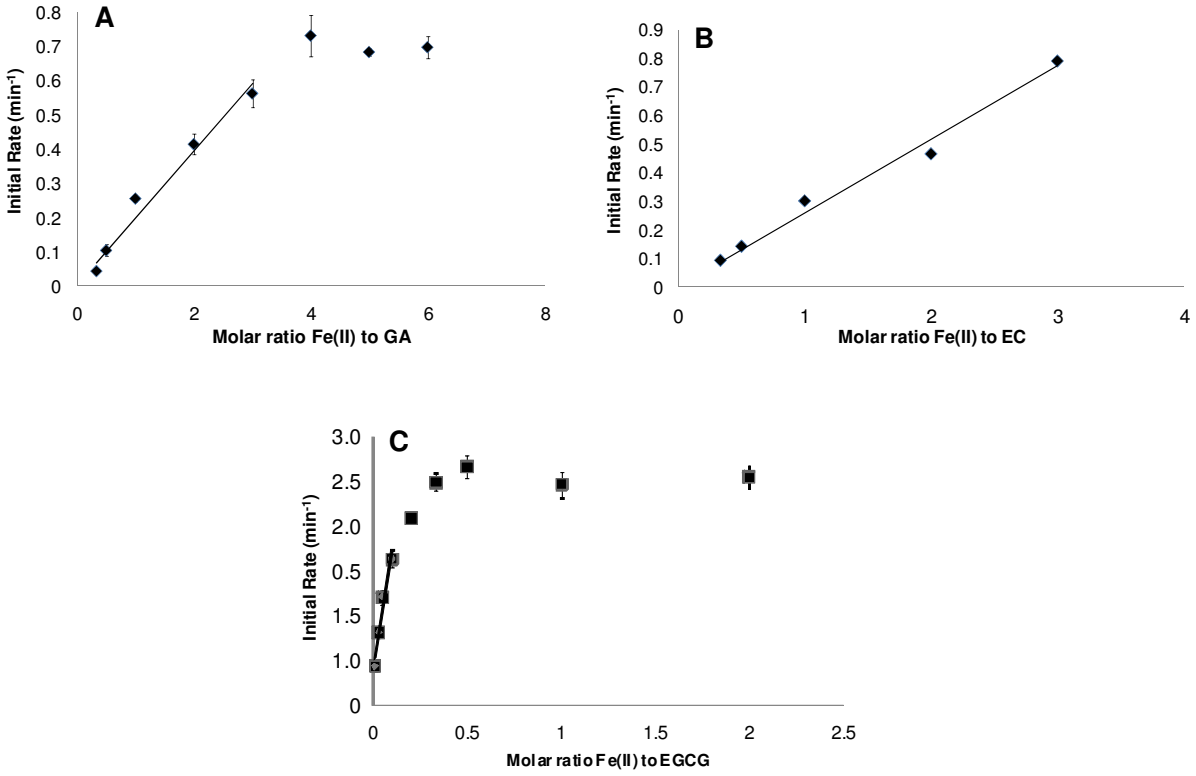

Fig. S5 Graphs showing the relationships between Fe^{2+} oxidation reaction rate and concentration of Fe^{2+} for samples of A) gallic acid (GA; y = 0.1969x); B) epicatechin (EC; y = 0.2578x); and C) (-)-epigallocatechin-3-gallate (EGCG; y = 13.083x + 0.4032). For all compounds, Fe^{2+} autooxidation is first order with respect to polyphenol ligand (solid line, R^2 = 0.97, 0.98, and 0.95, respectively). Error bars represent the standard deviations.