Electronic Supplementary Material (ESI) for Food & Function.

Iron-induced peroxidation of trilinolein nano-emulsions under model gastric conditions and its inhibition by dietary phenolic antioxidants

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SUPPLEMENTARY MATERIAL

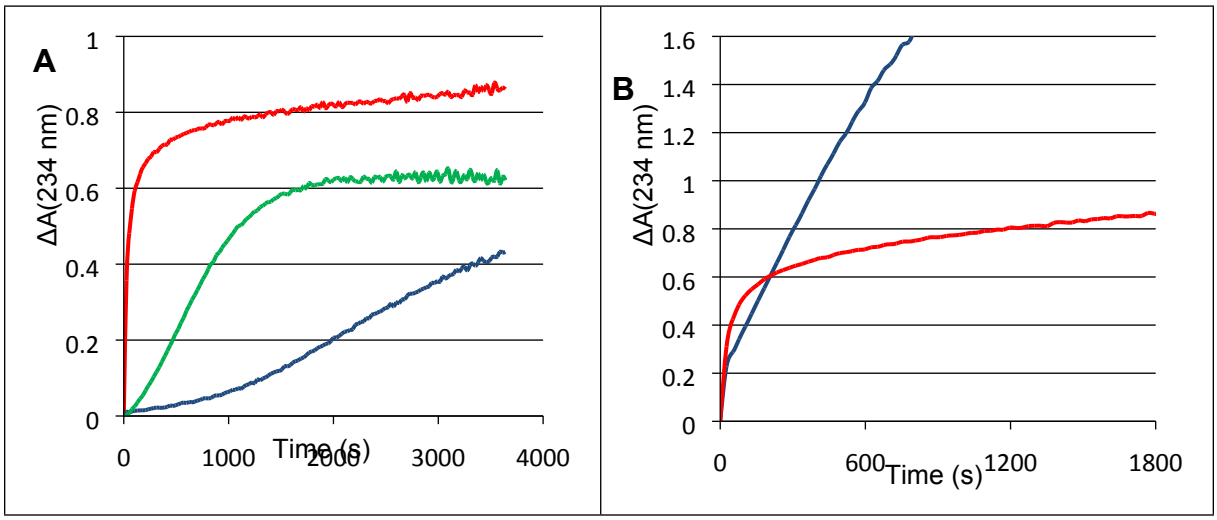

Fig. 1-SM. Iron-induced peroxidation of trilinolein nano-emulsion. Influence of pH and iron form. **A:** pH 4.0, iron concentration = 2 µM, $MbFe^{III}$ (—), $FeSO_4$ (—), $Fe(NO_3)_3$ (—).
B: Initiator: 2 µM $MbFe^{III}$, pH 5.8 (—), pH 4.0 (—). $\Delta A = A(t) - A(t = 0)$.

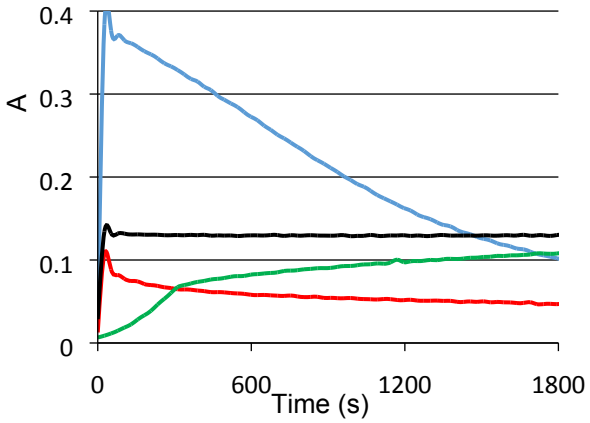

Fig. 2-SM. Iron-induced peroxidation of trilinolein nano-emulsion. Fate of iron forms. Initiator: 2 µM $MbFe^{III}$, pH 5.8 (—, Soret band, detection at 410 nm), pH 4.0 (—, Soret band, detection at 400 nm), 80 µM $FeSO_4$ (—) and 80 µM $Fe(NO_3)_3$ (—), detection at 340 nm (Fe^{III} absorption).

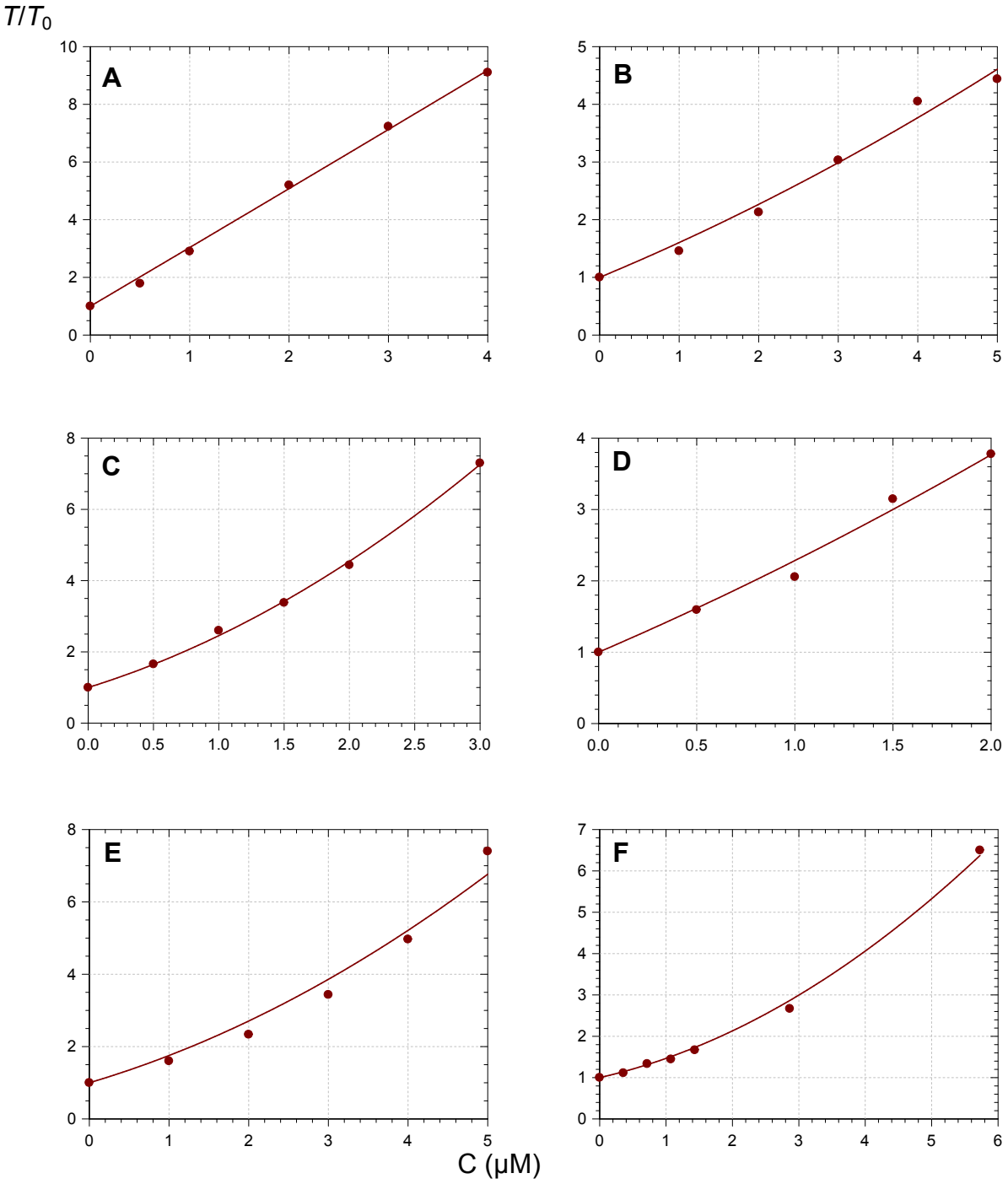

Fig. 3-SM. Inhibition of heme-induced peroxidation of trilinolein nano-emulsion by phenolic antioxidants, pH 5.8. Plots of T/T_0 *vs*. antioxidant concentration for IC_{50} determination (mean of 3 repetitions). **A:** rutin, IC_{50} = 0.49 (± 0.02) µM, **B:** α-tocopherol, IC_{50} = 1.61 (± 0.16) µM, **C:** malvidin 3-glucoside, IC_{50} = 0.73 (± 0.03) µM, **D:** epicatechin, IC_{50} = 0.79 (± 0.03) µM, **E:** procyanidin DP3, IC_{50} = 1.28 (± 0.08) µM, **F:** procyanidin DPm8, IC_{50} = 1.83 (± 0.04) µM.

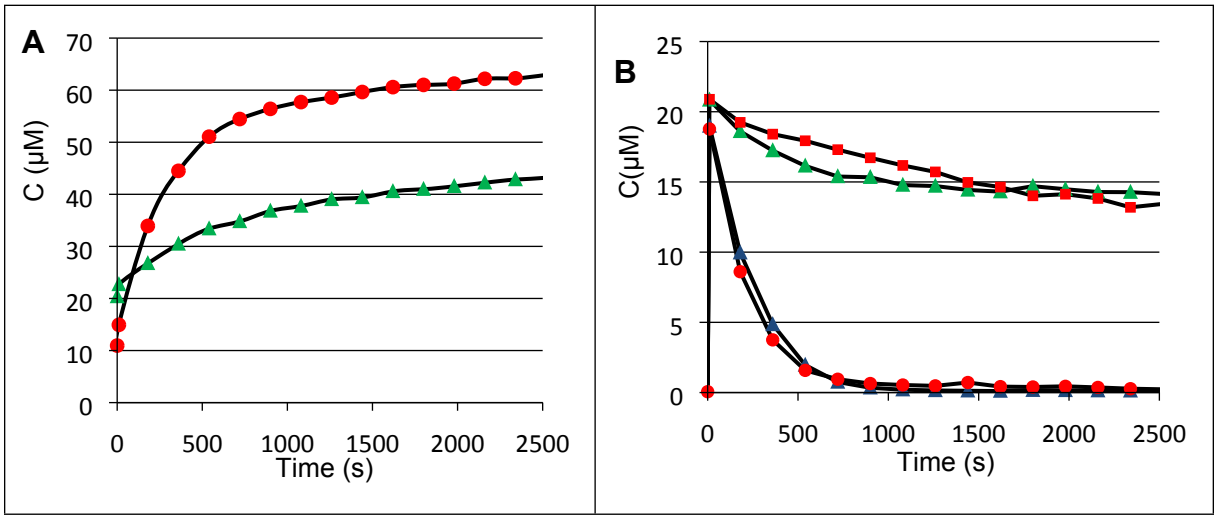

Fig. 4-SM. Inhibition of iron-induced peroxidation of LA micelles by rutin, pH 4.0, rutin concentration = 0 or 10 µM, initiation by 20 µM $FeSO_4$. **A:** CD accumulation (▲), control (no rutin, ●). **B:** Fe^{II} consumption, ●: LA, no rutin, ▲: no LA, no rutin, ■: LA + rutin, ▲: no LA, rutin.

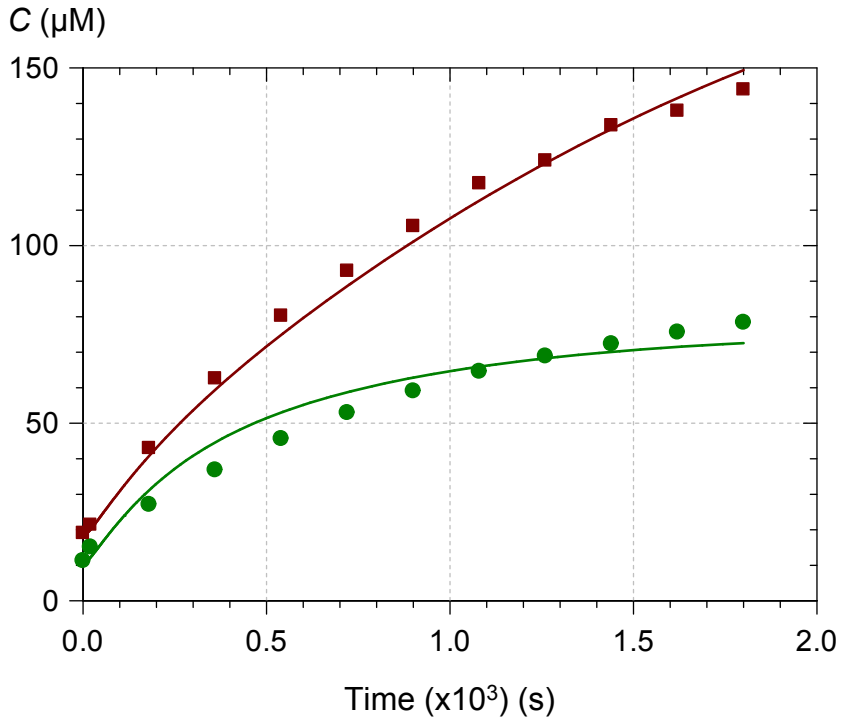

Fig. 5-SM. Heme-induced peroxidation of trilinolein nano-emulsion, pH 5.8. Simultaneous curve-fitting of the plots featuring the accumulation of conjugated dienes (•) and hydroperoxides (■). Fixed parameters: $k_{i1} = 10^3$ M^{-1} s^{-1}, $r_{ox} = 1.3$ $M^{-1/2}$ $s^{-1/2}$, $C_d = 1$ μM, $k_{p1}[O_2] = 7.5 \times 10^4$ s^{-1}. Optimized parameters: $k_{p2} = 4 \times 10^2$ M^{-1} s^{-1}, $k_e = 3 \times 10^3$ M^{-1} s^{-1}.