

Supplementary Materials: Iron Gall Ink Revisited: Natural Formulation for Black Hair-Dyeing

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Figure S1. Optical photographs of the hair samples after dyeing (χ_{GA} : 0.0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, and 1.0).

Table S1. L^* values before and after hair dyeing. [TA + GA] = 10 mM; [Fe(glu)₂] = 10 mM.

χ_{GA}	Before Dyeing	After Dyeing	ΔL^*
0.0	82.1±0.4	46.2±0.8	35.9
0.1	81.8±0.2	34.9±1.1	46.9
0.2	80.7±0.6	33.3±0.6	47.4
0.3	81.8±0.6	31.4±0.4	50.4
0.4	81.5±0.8	30.5±0.6	51.0
0.5	82.3±0.5	30.2±0.5	52.1
0.6	82.3±0.3	25.5±0.4	56.8
0.7	82.3±0.4	23.4±0.5	58.9
0.8	80.8±0.3	22.3±0.4	58.5
0.9	80.9±0.5	21.1±0.4	59.8
1.0	80.0±0.5	24.8±0.5	55.2

Table S2. L^* values before and after hair dyeing. [Fe(glu)₂] = 10 mM; [TA] = 1 mM.

[GA] / mM	Before Dyeing	After Dyeing	ΔL^*
0	81.4±0.3	29.7±0.4	51.7
1	83.0±0.4	22.2±0.7	60.8
2	83.4±0.3	20.0±0.7	63.4
5	84.2±0.3	20.0±0.2	64.2
10	85.3±0.4	18.1±0.5	67.2
20	83.5±0.5	20.6±1.0	62.9
50	85.2±0.3	24.4±0.6	60.8
70	82.2±0.4	27.4±1.0	54.8