

Gum arabic and Fe^{2+} synergistically improve the heat and acid stability of norbixin at pH

3.0-5.0

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Supporting information

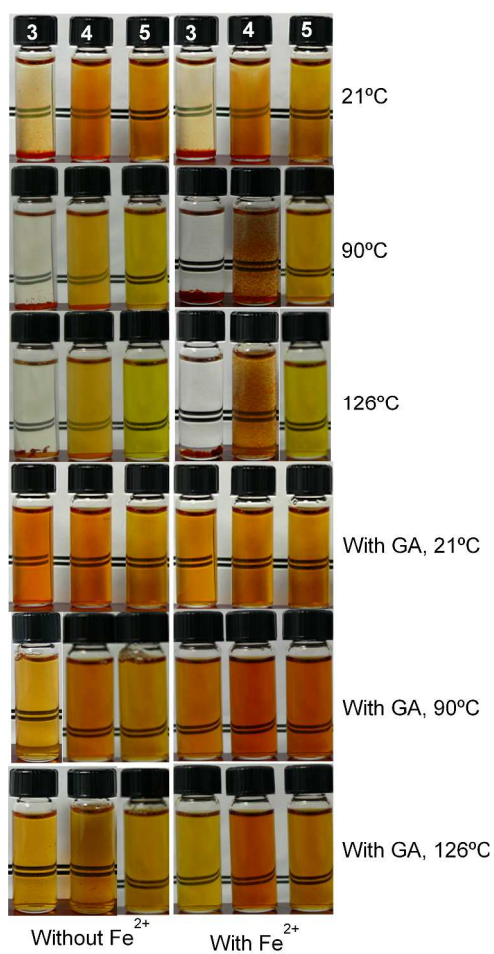


Figure S1. Photographs of dispersions with norbixin, gum arabic and Fe^{2+} at pH 3.0, 4.0, and 5.0, before and after heating at 90 or 126 °C for 30 min.

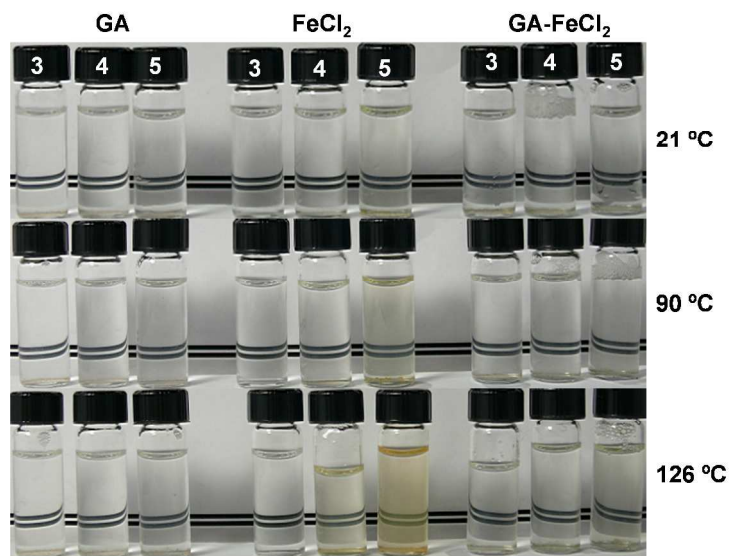


Figure S2. Photographs of 2% w/v GA, 0.02% w/v FeCl₂, and the mixture with 2% w/v GA and 0.02% w/v FeCl₂ at pH 3.0, 4.0 and 5.0, before and after heating at 90 and 126 °C for 30 min.

Supplemental.

Table S1. Changes of absorbance at 460 nm (A_{460}) of norbixin and norbixin-gum arabic (GA) dispersions with and without Fe^{2+} at pH 3.0-5.0, before and after heating at 90 or 126°C for 30 min.^ζ

Heating temperature	pH	A_{460}	
		Norbixin	Norbixin-GA
None	3.0	N/D*	0.152±0.041 ^{ab}
	4.0	N/D	0.161±0.032 ^{abc}
	5.0	0.218±0.046 ^{cd}	0.215±0.001 ^{cd}
90°C	3.0	N/D	N/D
	4.0	N/D	0.128±0.02 ^{cd}
	5.0	0.107±0.018 ^a	0.222±0.029 ^d
126°C	3.0	N/D	N/D
	4.0	N/D	N/D
	5.0	0.106±0.059 ^a	0.232±0.012 ^d
None, with Fe^{2+}	3.0	N/D	0.147±0.001 ^{ab}
	4.0	N/D	0.135±0.022 ^{cd}
	5.0	0.226±0.018 ^d	0.243±0.002 ^d
90°C, with Fe^{2+}	3.0	N/D	0.132±0.008 ^{ab}
	4.0	N/D	0.228±0.007 ^d
	5.0	0.139±0.005 ^{ab}	0.251±0.038 ^d
126°C, with Fe^{2+}	3.0	N/D	0.121±0.050 ^a
	4.0	N/D	0.189±0.032 ^{bcd}
	5.0	0.144±0.002 ^a	0.235±0.076 ^d

^ζNumbers are mean ± standard deviation (n = 3). Different superscript letters represent significant differences in the mean ($p < 0.05$).

*N/D: not determined due to precipitation.