1 Electronic Supplementary Information

2 **Determination of allura red using composites of water-dispersible reduced**
3 **graphene oxide loaded Au nanoparticles based on ionic liquid**

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Fig. S1. High-resolution TEM image of IRGO/Au.

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Fig. S2. UV-Vis spectra of IRGO in water at different concentrations (a to e) of 0.05, 0.15, 0.25, 0.4 and 0.6 mg mL^{-1} , respectively. (B) The plot of the absorbance intensity versus the concentration. Inset: the photograph of IRGO dispersion.

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28 **Fig. S3.** CV curves of allura red on the surfaces of IRGO/Au/GCE in 0.1 mol L⁻¹ BR
29 solutions (pH 5.0), scan rate, 100 mV s⁻¹.

30 During the anodic sweep from 0.20 to 1.0 V, an oxidation peak (O1) is observed
31 at 0.73 V (1st cycle). On the reverse scan (2nd cycle) from 1.0 V to 0.20 V, a reduction
32 peak (R2) appears at 0.37 V. During the second anodic sweep, another oxidation peak
33 (O2) is observed at 0.42 V, and the O1 peak obviously decreases. These phenomena
34 indicate that the O1 peak is attributed to the direct oxidation of Allura Red, and the
35 R2/O2 peak couple may correspond to the oxidative product [1,2].

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Fig. S4. (A) SWV curves of 0.08 μM allura red for 6 assay runs; (B) SWV curves of 0.06 μM allura red at 6 dependently IRGO/Au/GCEs.

Fig. S5. The SWV curves of $0.08 \mu\text{mol L}^{-1}$ allura red and the SWV curves of $0.08 \mu\text{mol L}^{-1}$ allura red after addition of different concentrations of interferences.

Reference

- [1] Y. Zhang, X. Zhang, X. Lu, J. Yang and K. Wu, Food Chemistry **122** (3), 909-913 (2010).
- [2] M. Wang, M. Yang, Q. Sun, Y. Gao and J. Zhao, International Journal Of Environmental Analytical Chemistry **95** (11), 969-979 (2015).