Supplementary material

Title: A sustainable methodology employing the extract of red dragon fruit peel as a fluorescence probe for detection of indigo carmine (E132) in food samples: Evaluating the method's greenness, whiteness, and blueness

Supplementary Tables

Table S1: The used parameters in the assessment and evaluation of greenness for the suggested method

Tool	Used parameter	Ref.
Modified NEMI	Using publicly available chemical databases	[25]
Complex GAPI	Using the Analytical ComplexGAPI Metric approach and Software	[26]
AGREE prep	Using the Analytical GREEnness Metric approach and Software	[27]
BAGI tool	Using the BAGI algorithm and Software	[28]
RGB12 evaluation	Using the Analytical RGB 12 algorithm	[29]
NQS index	Using the RGB 12 algorithm provoked forth by Kiwfo et al.	[30]

Supplementary Figures

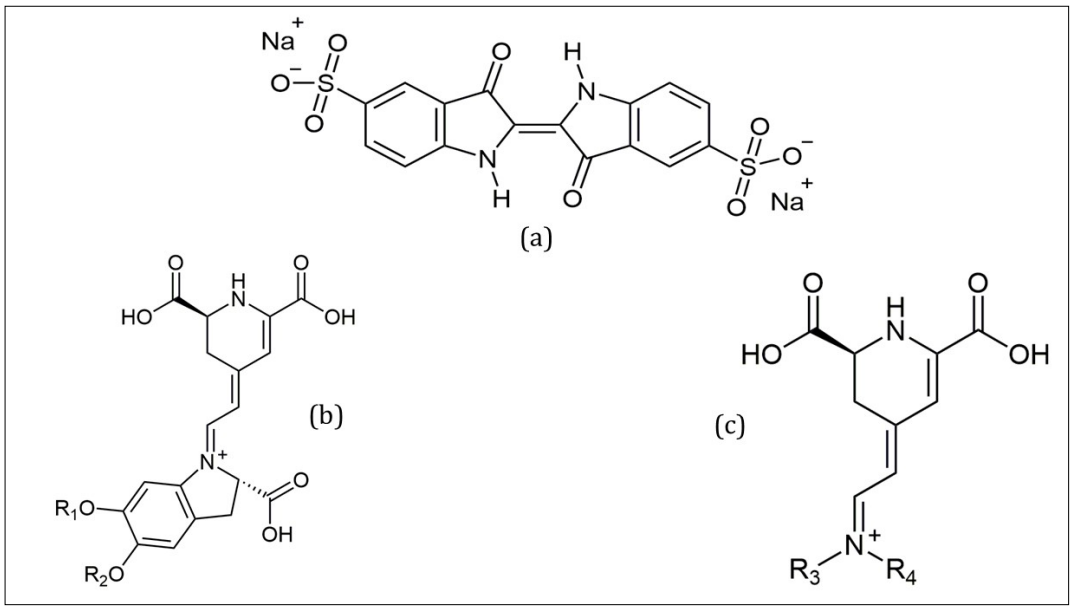

Figure S1: (a) for the chemical structure of indigo carmine, (b) for the chemical structure of betacyanins, and (c) for the chemical structure of betaxanthins. R_1 and R_2: hydrogen or sugar moieties; R_3: amine or amino acid group; R_4: usually hydrogen.

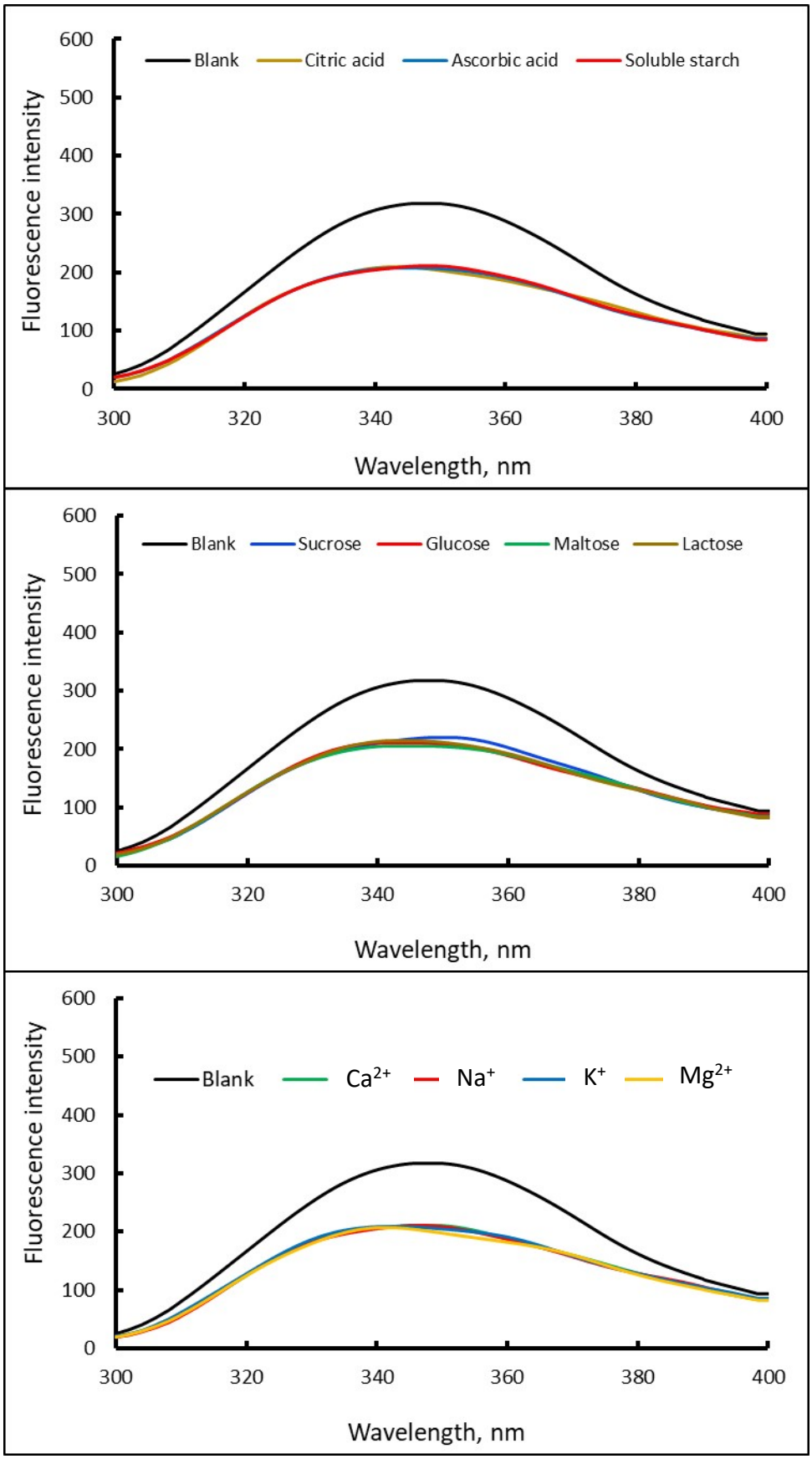

Figure S2: Spectra for the selectivity study for the proposed method.

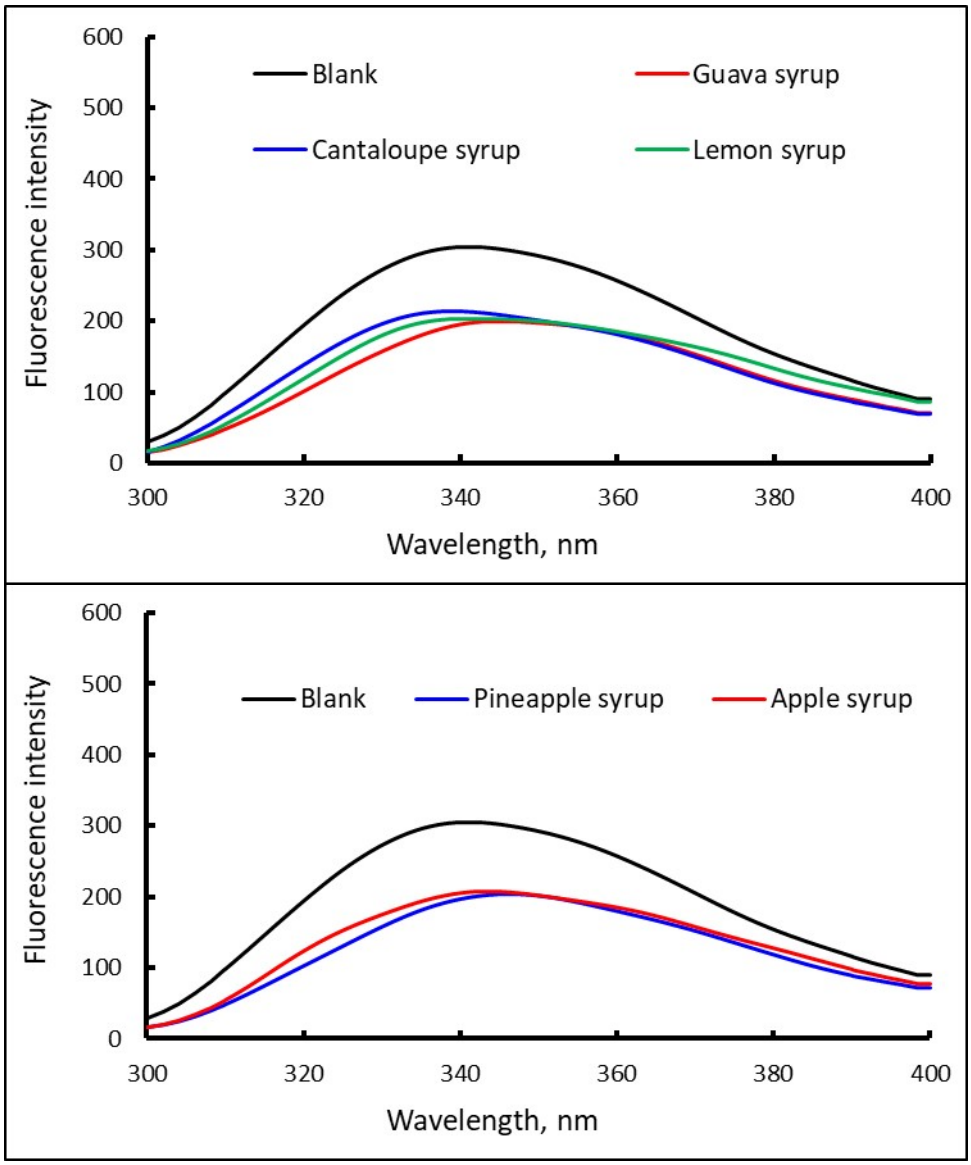

Figure S3: Spectra for the detection of spiked indigo carmine dye in different syrup samples by the proposed method.

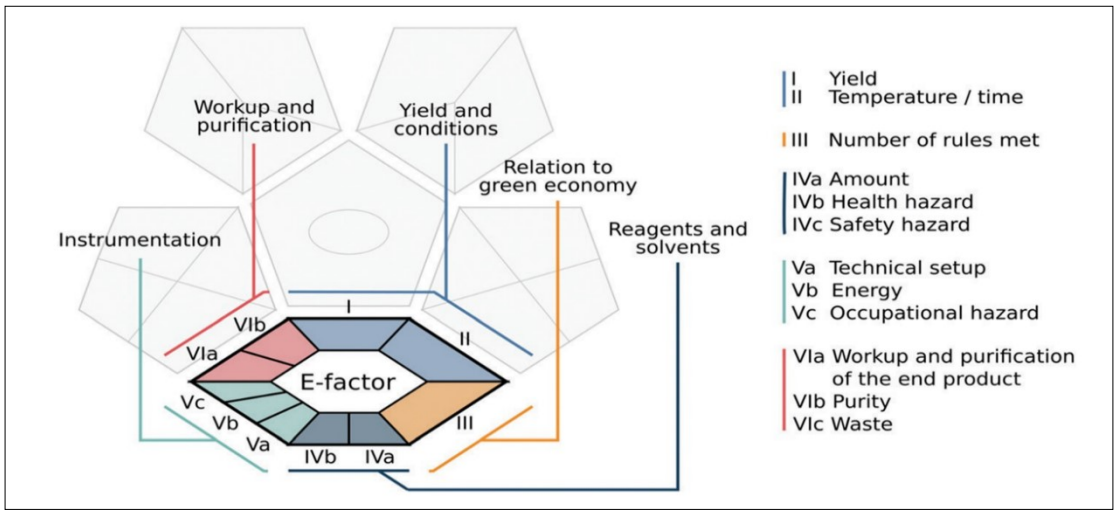

Figure S4. The ComplexGAPI pictogram, with the original GAPI pictogram greyed out in the background, and particular fields of the added hexagonal glyph are grouped and color-coded for clarity.

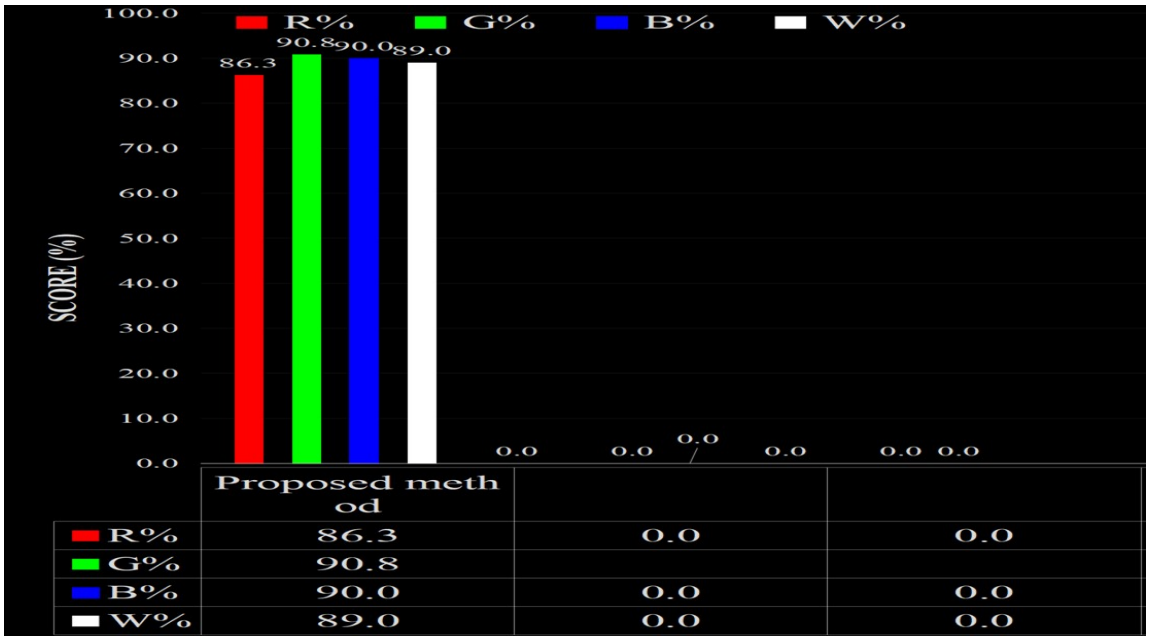

Figure S5: The redness, greenness, blueness, and whiteness profiles of the proposed method obtained by the RGB 12 algorithm.

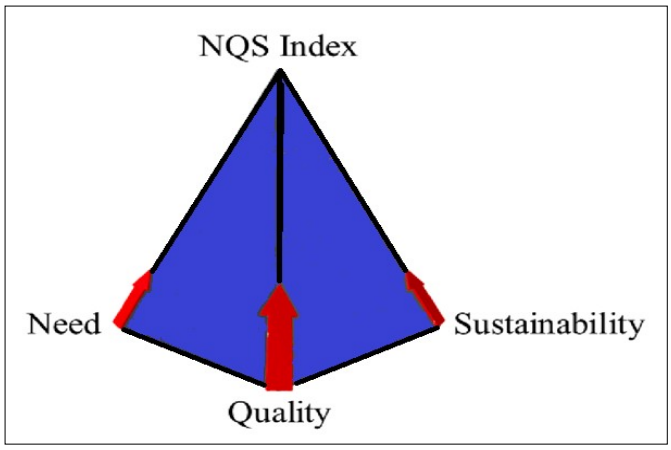

Figure S6: A triangular pyramid illustrates analytical chemistry for sustainability according to the Need, Quality, and Sustainability (NQS) index.