Electronic Supplementary Material (ESI) for Analytical Methods.

Electronic Supplementary Information for:

Simultaneous analysis of multiple adulterants in milk using microfluidic paper-based analytical devices

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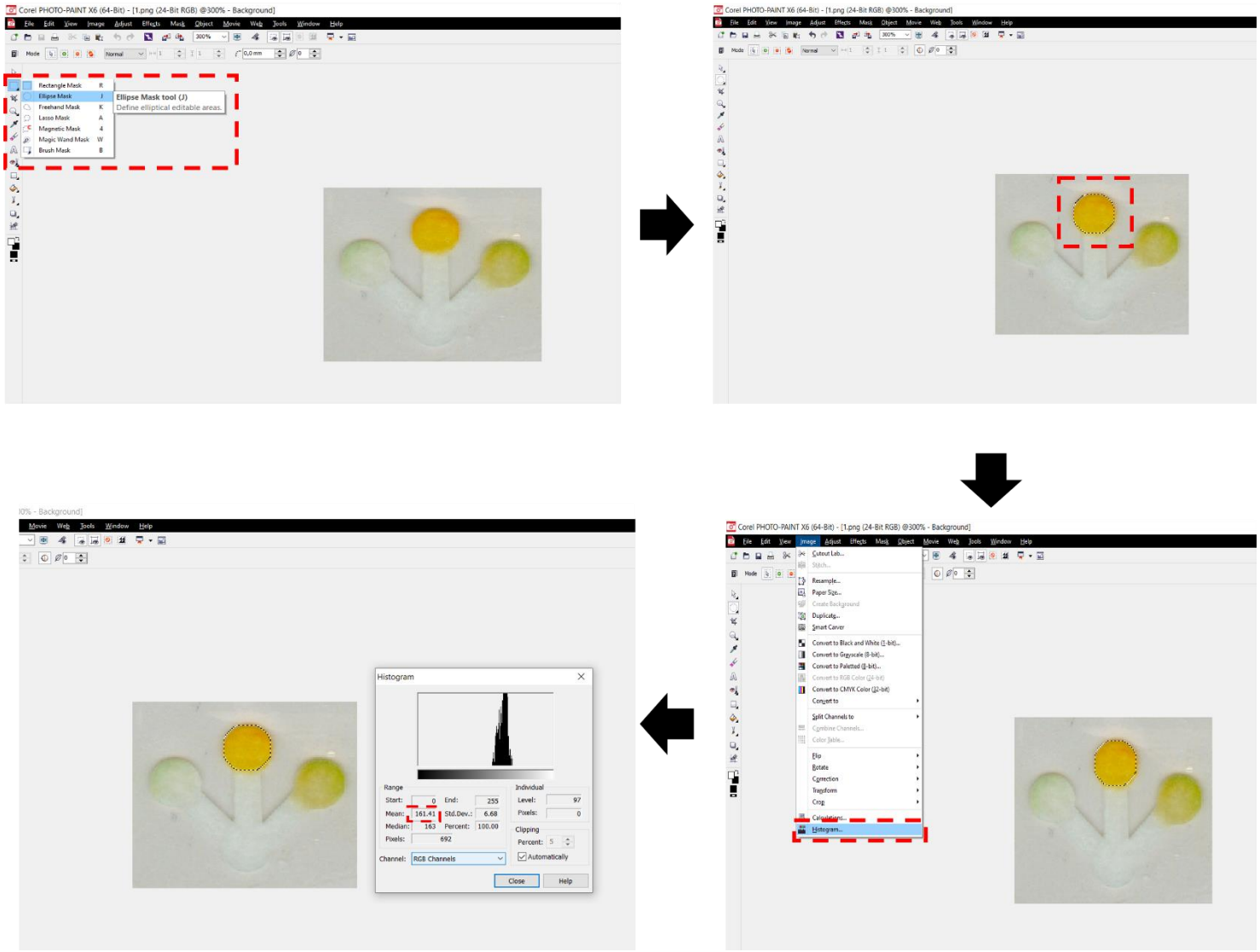

Figure S1 *The workflow of colorimetric analysis. Firstly, the image is captured, then, by Corel PhotoPaint software, the detection zones are selected for analysis and using the histogram to the image is analyzed in the selected color channel, showing the registered color intensity.*

Table S1 Data extracted for simultaneous assays performed on seven independent devices under the same protocol for reproducibility evaluation.

µPADs	Urea (mmol L^{-1})	H_2O_2 (mmol L^{-1})	pH
1	28.6	4.3	7.34
2	26.9	4.7	7.54
3	27.5	4.9	7.40
4	26.5	4.5	7.44
5	25.7	4.8	7.37
6	26.8	4.15	7.14
7	25.7	4.5	7.27
RSD (%)	**3.9**	**6.0**	**1.8**

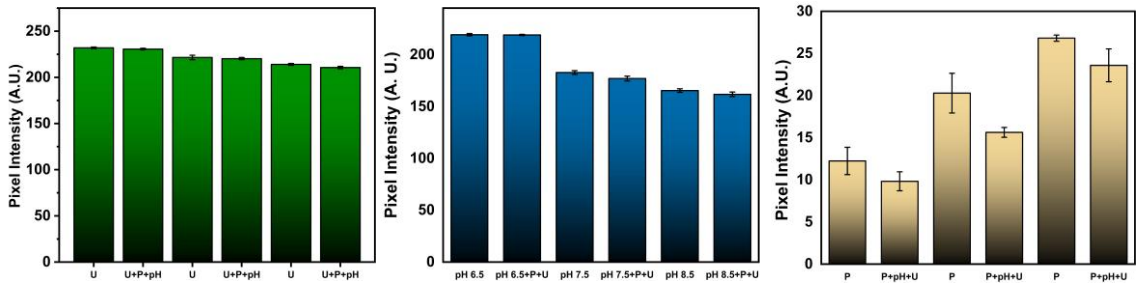

Figure S2 *Colorimetric readouts showing five measurements of pixel intensities for each analyte in the absence and presence of other adulterants*

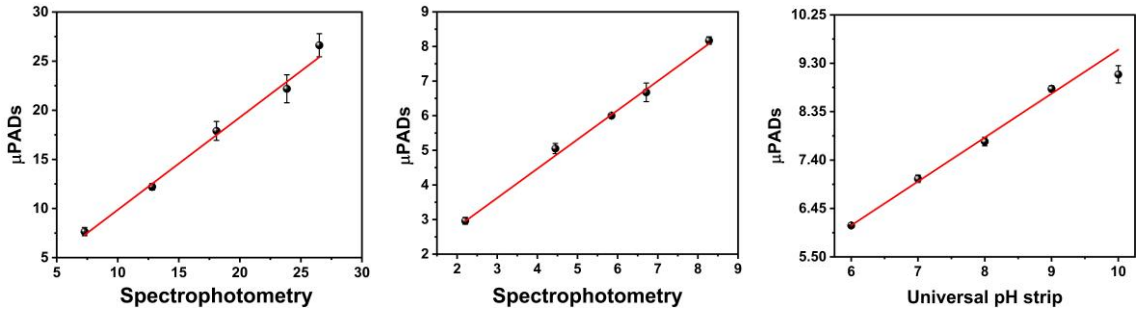

Figure S3 *Comparison between the results obtained through reference techniques. Spectrophotometric analysis for urea and hydrogen peroxide and universal strips for pH measurements. Calibration curves for urea y = (0.96 ± 0.20) x + (0.33 ± 2.68), for H_2O_2 y = (0.84 ± 0.97) x + (0.66 ± 4.04) and for pH y = (0.77 ± 3.45) x + (1.60 ± 19.83), and correlation coefficients (r) for urea, H_2O_2 and pH were 0.989, 0.997 and 0.998, respectively. Each symbol (●) represents the average of colour intensity for three measurements and the error bars indicate the standard deviations.*

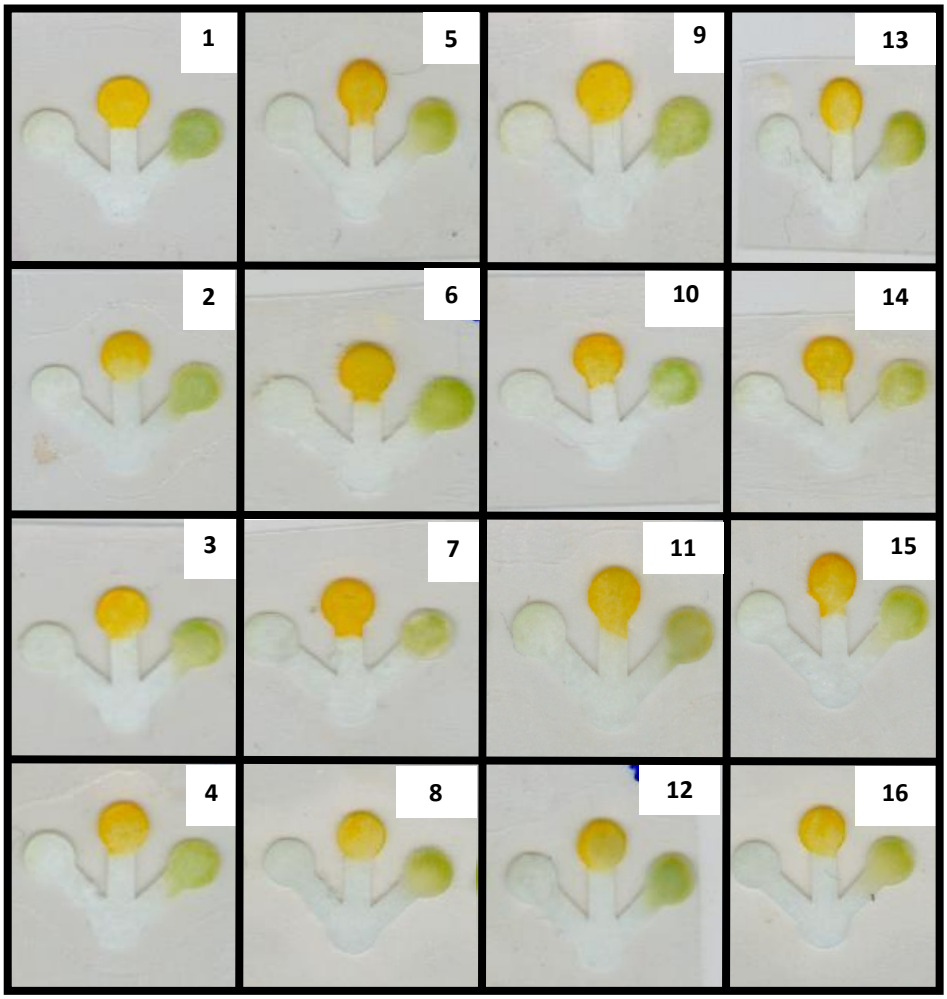

Figure S4 *Captured images of μPADs used for quantitative analysis of milk samples.*