

**Electronic Supplementary Information for:**

**Distance-Based Detection of Paracetamol in Microfluidic Paper-Based**

**Analytical Devices for Forensic Application**

Nikaele S. Moreira,<sup>a</sup> Kemilly M. P. Pinheiro,<sup>a</sup> Lucas R. Sousa,<sup>a,b</sup> Gabriel D. S. Garcia,<sup>a</sup> Federico

Figueredo<sup>b</sup> e Wendell K. T. Coltro<sup>a,c</sup>

<sup>a</sup> *Instituto de Química, Universidade Federal de Goiás, 74690 - 900, Goiânia, GO, Brazil*

<sup>b</sup> *Laboratorio de Biosensores y Bioanálisis (LABB), Departamento de Química Biológica e IQUIBICEN' – CONICET, Facultad de Ciencias Exactas y Naturales, Universidad de Buenos Aires (UBA), Pabellón 2, Ciudad Universitaria, Ciudad Autónoma de Buenos Aires, Argentina*

<sup>c</sup> *Instituto Nacional de Ciência e Tecnologia de Bioanalítica, 13084-971, Campinas, SP, Brazil*

**\*Corresponding Author:**

Professor Wendell K. T. Coltro

Instituto de Química, Universidade Federal de Goiás

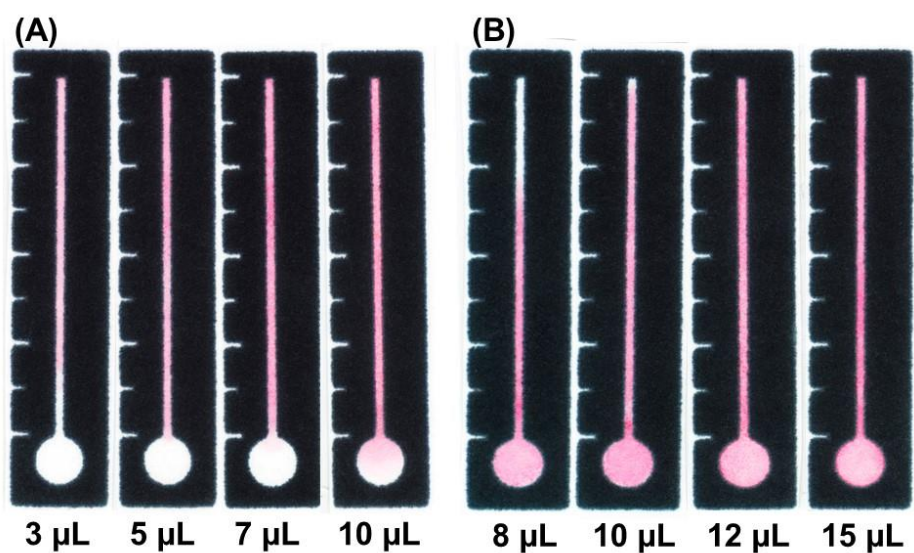
Campus Samambaia, 74690-900

Goiânia, GO, Brazil

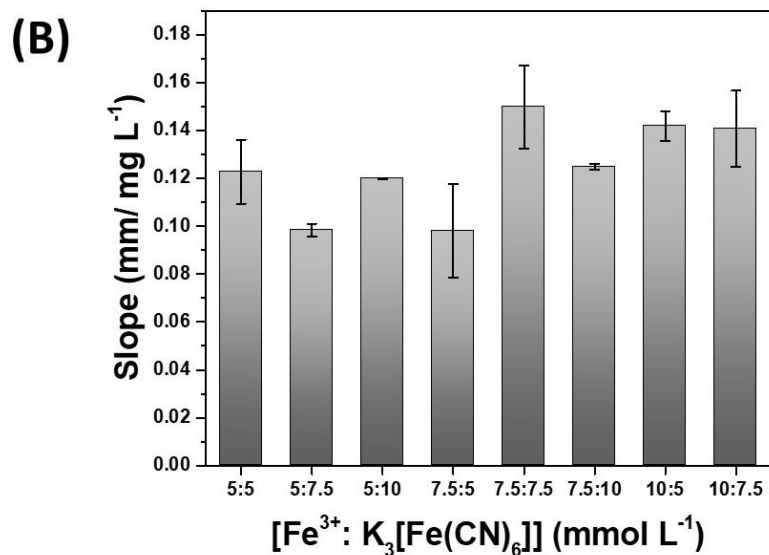
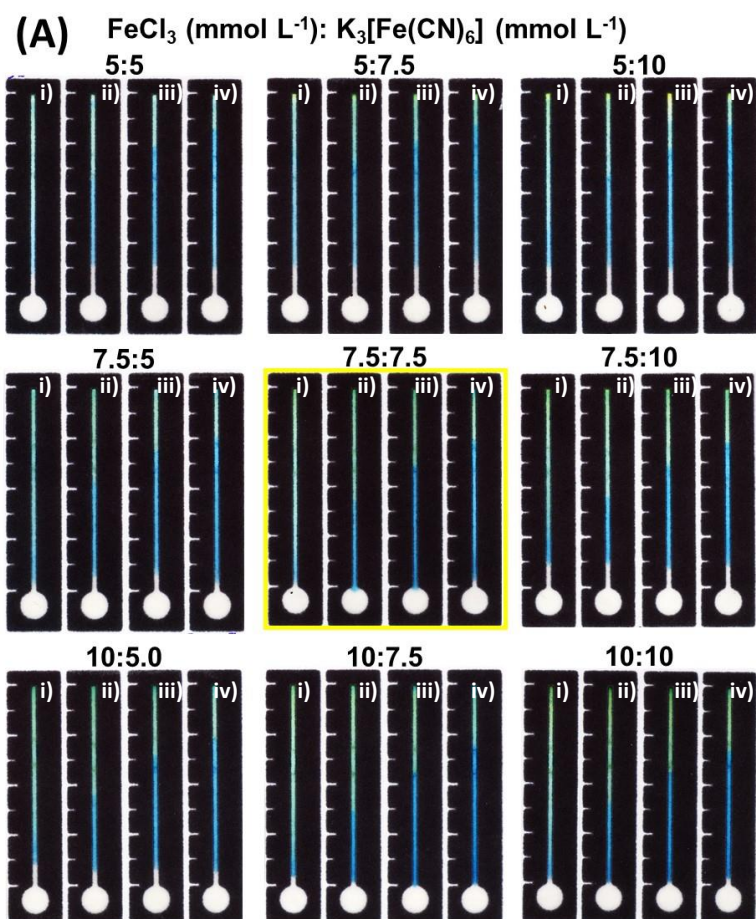
Fax: +55 62 3521 1127

E-mail: [wendell@ufg.br](mailto:wendell@ufg.br)

**ORCID:** <http://orcid.org/0000-0002-4009-2291>



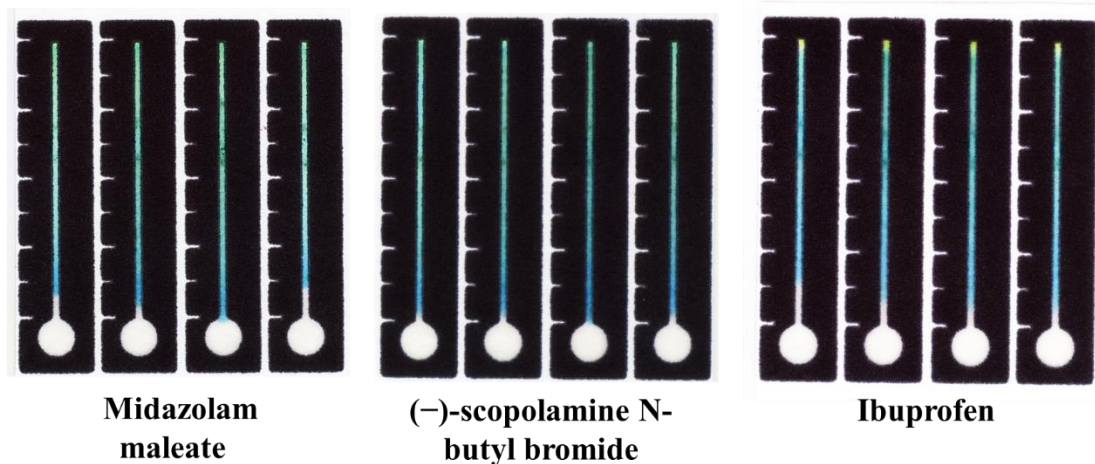
**Fig. S1** Optimization of solution volume to be used in  $\mu\text{PAD}$ . In (A), to verify the ideal volume to be added to saturate the  $\mu\text{PAD}$  channel, different volumes of red dye mixture containing 4% ethanol were added in the middle of the rectangular channel. In (B), to evaluate the ideal volume to fill the entire device, different volumes of red dye mixture containing 4% ethanol were added to the circular zone (sample zone) to fill the entire device (circular zone and rectangular channel).



**Fig. S2** Optical images (A) for the evaluation of the concentration of chromogens applied in the channel for the formation of Prussian Blue using standard solutions of Paracetamol at concentrations (i) 0; (ii) 20; (iii) 60 and (iv) 100 mg L<sup>-1</sup>, varying in proportions of the chromogens Fe (III) and Potassium hexacyanoferrate (III) within a concentration range of 5:5 - 10:10 mmol L<sup>-1</sup>. In (B), sensitivity values obtained for each proportion.

**Table S1.** Distance-based paracetamol detection recovery tests in  $\mu$ PADs.

Added [Paracetamol] / mg L <sup>-1</sup> (n=3)	Distance (mm)	Found [Paracetamol] / mg L <sup>-1</sup>	Recovery (%)
30	18.99 ± 0.44	29.8 ± 2.8	99.4
60	23.73 ± 0.28	59.8 ± 1.8	99.7
100	28.65 ± 0.29	91.0 ± 1.8	91.0

**Fig. S3** Evaluation of interferents on devices for detecting paracetamol. 12  $\mu$ L was added to the sample zone containing 50 mg L<sup>-1</sup> of each interferent separately and was performed in quadruplicate.**Table S2.** Comparison of distance-based paracetamol detection in  $\mu$ PAD with the reference method.

Samples	Added concentration / mg L <sup>-1</sup>	Found [Paracetamol] / mg L <sup>-1</sup>		Relative error (%)
		Proposed method	Reference method	
#1	0	ND	ND	-
#2	300	315.4 ± 15.8	312.3 ± 1.4	1.0
#3	600	379.4 ± 11.7	387.9 ± 5.7	2.2
#4	800	765.8 ± 63.3	758.9 ± 0.8	4.4