A trimodal detection paper chip for undisclosed drug "Sibutramine" in nutraceuticals

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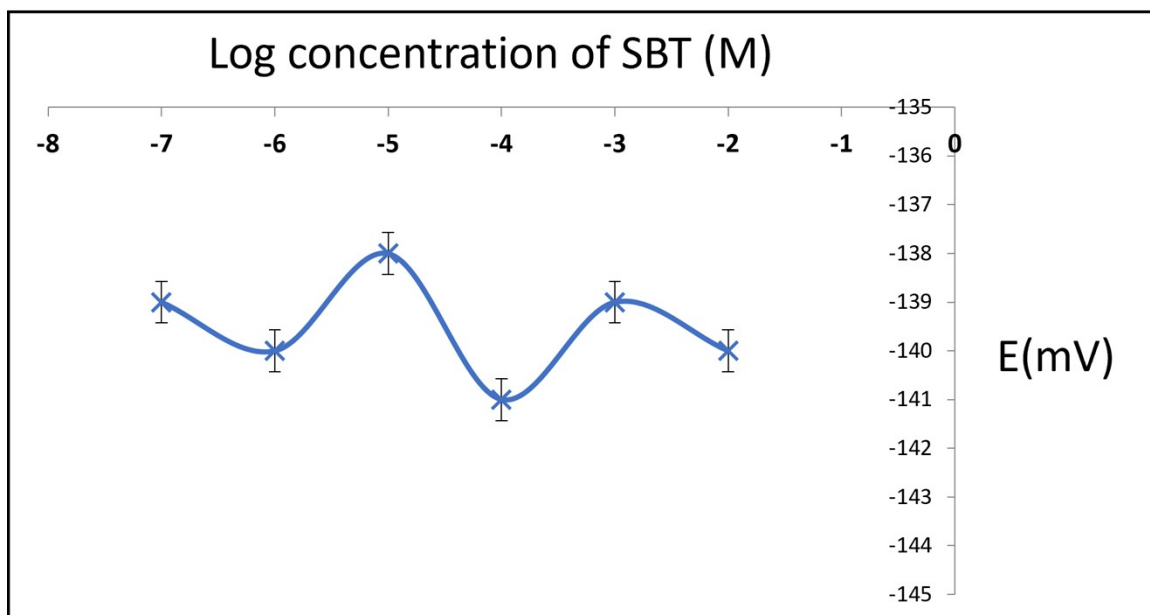
Fig. S1. Potential readings of the proposed screen-printed reference electrode in conjunction with Ag/AgCl reference one in 1.0×10^{-7}–1.0×10^{-2} M SBT solutions.
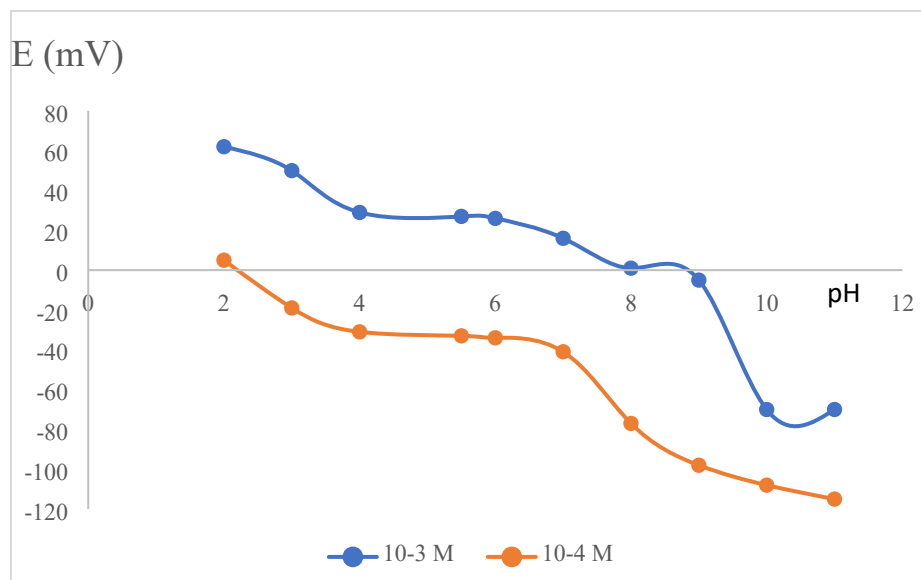
Fig. S2. Effect of pH on the response of the proposed electrodes at concentrations 10^{-3} and 10^{-4} M.

Table S1. Statistical comparison of the results obtained by the proposed potentiometric and fluorimetric sensors and the reported method on pure form.

Term	HPLC-Reported method [a]	Potentiometric sensor	Fluorimetric sensor
Mean	100.04	100.65	101.13
± SD	1.85	2.94	3.28
Variance	3.42	8.64	10.75
n	5	5	5
Student's *t*-test (2.364)[b]	NA	0.393	0.647
F value (6.591)[b]	NA	1.012	1.022

[a] HPLC analysis using a phenyl column (5.0 μm, 150 mm × 4.6 mm, i.d.) and an isocratic mobile phase of acetonitrile–water–formic acid (pH 3.0; 0.19 M) (45:55:0.78, v/v/v).
[b] Figures between parentheses represent the corresponding tabulated values of t and F at P=0.05.

Table S2. Greenness assessment of the proposed sensor using Eco-Scale and GAPI tools

Greenness profile	EC-µPAD sensor
Analytical ecoscale	
Reagents	
THF	6
Buffer	0
$HAuCl_4$	4
Trisodium citrate	1
Citric acid	1
Urea	1
	0
Energy (≤ 0.1 kWh per sample)	0
Occupational Hazard	6
Waste	19
Total Penalty points	81
Analytical Eco-Scale total score	
GAPI	

Table S3. Determination of SBT in slimming formulations using the proposed device and the recovery of the spiked standard concentrations.

Slimming formulations	Potentiometric sensor		Fluorimetric sensor		Colorimetric senor
	Found concentration in spiked sample (w/w%)[a]	Calculated concentration in un-spiked sample (w/w%)	Found concentration in spiked sample (w/w%)[a]	Calculated concentration in un-spiked sample (w/w%)	Color change in spiked sample
via ananas capsules	0.86	0.02[b]	0.85	0.01[b]	Not detected
Aplex	0.29	0.26	0.31[c]	0.28	Detected
Sekem herbal tea	0.43	0.01[b]	0.43[c]	0.01[b]	Not detected
Chinese herbal mixture	0.71	0.44	0.72	0.45	Detected

[a] Average of five determination.
[b] Calculated values are within the random error of the proposed methods (2.94% for potentiometric and 3.28% for fluorimetric sensors)
[c] Five-fold dilution was applied before measurement.