Supplementary Information for

Rapid and sensitive detection of drugs of abuse in sweat by multiplexed capillary based immuno-biosensors

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Figure S1. Picture of the cartridge.

(A)

1 ng/mL	0.5 ng/mL	0.2 ng/mL	0.1 ng/mL	0.04 ng/mL	0.008 ng/mL	0.0016 ng/mL	0 ng/mL

(B)

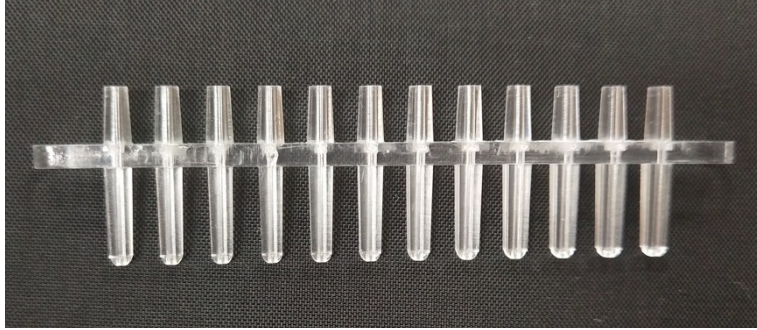methadone | METH | amphetamine | THC | methadone | METH | amphetamine | THC
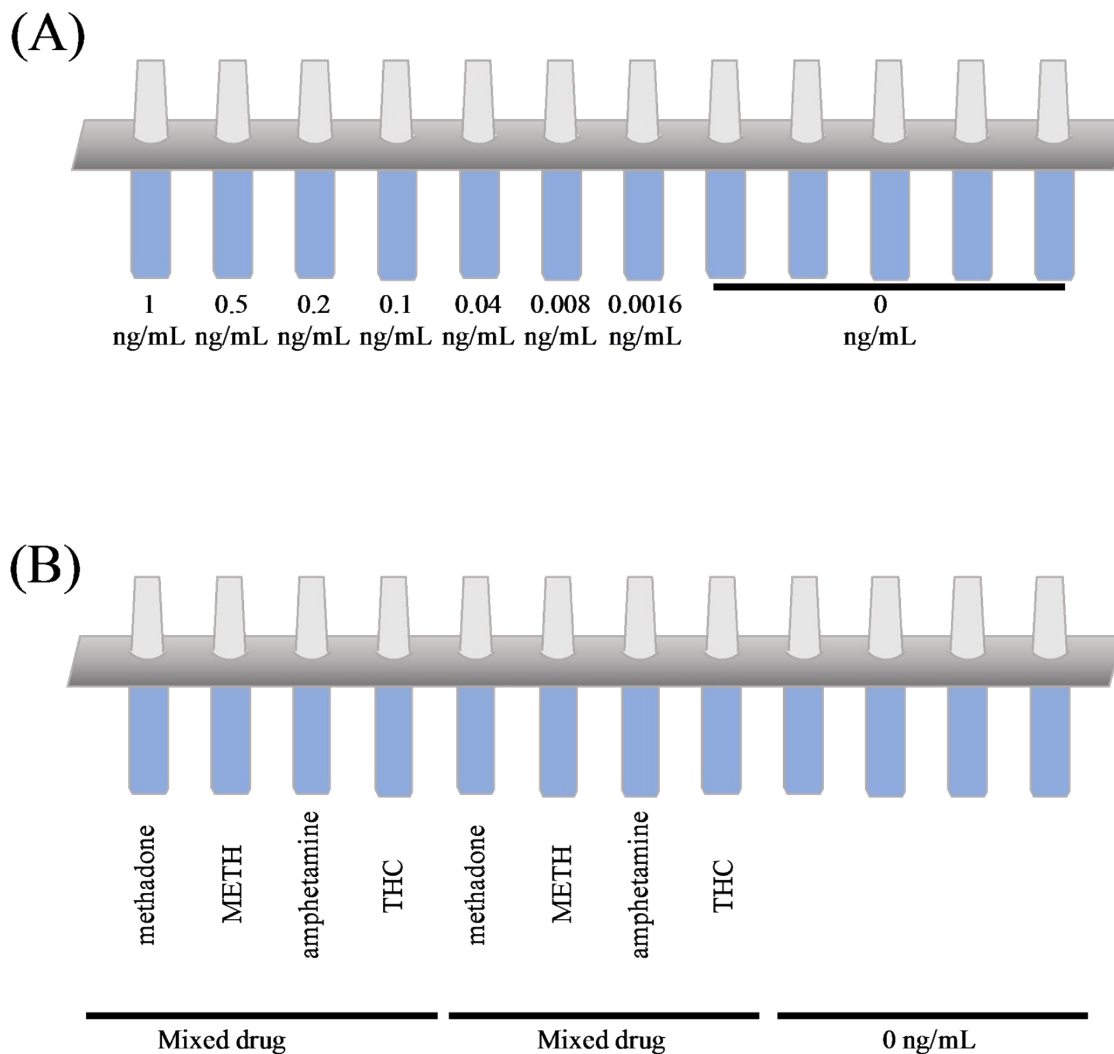
Mixed drug | Mixed drug | 0 ng/mL

Figure S2. (A) Sensor arrangement in a cartridge (capillary array) to generate inhibition curves for individual drugs. Methadone was used as an example with serial concentrations from 0.0016 ng/mL to 1 ng/mL. All twelve capillaries were coated with the antibody against methadone, among which five capillaries were used to generate the blank signal. Three such cartridges were used for each drug to generate the corresponding error bars. (B) Sensor arrangement in a cartridge (capillary array) for multiplexed drug detection. Within a cartridge, two sets of four capillaries, each of which was coated with the corresponding antibody, were allocated to perform duplicate measurement of the same drug mixture. The remaining four capillaries were used to generate the blank signal. For each drug mixture, two such cartridges were used (for a total of four sets of four capillaries). The error bars are obtained from the four sets of measurements.

Table S1. Recovery rate of multiplexed drug detection with one drug absent

	Drug	Excepted (Spiked) (ng/mL)	Observed (ng/mL)	Recovery rate (%)	Averaged recovery rate (%)
High level	Methadone	0.6	0.61±0.14	101.9	
	METH	18	14.60±2.83	81.0	91.7
	Amphetamine	0	0	-	
	THC	800	738±5.70	92.2	
Intermediate level	Methadone	0.06	0.07±0.03	110.3	
	METH	0	0	-	109.0
	Amphetamine	1.6	1.77±0.38	110.6	
	THC	100	106.20±2.92	106.2	
Low level	Methadone	0	0	-	
	METH	0.18	0.21±0.03	116.6	119.1
	Amphetamine	0.16	0.20±0.02	121.3	
	THC	0.1	0.12±0.01	119.3	
Intermediate level	Methadone	0.5	0.61±0.05	122.0	
	METH	10	8.12±0.22	81.2	96.1
	Amphetamine	3	2.56±0.31	85.2	
	THC	0	0	-	

Table S2. Recovery rate of multiplexed drug detection with mixed drug-HRP conjugates

	Drug	Excepted (Spiked) (ng/mL)	Observed (ng/mL)	Recovery (%)	Averaged recovery rate (%)
High level	Methadone	0.5	0.35±0.06	70.0	
	METH	10	5.23±1.27	52.3	71.9
	Amphetamine	3	2.17±0.31	72.3	
	THC	500	463.70±4.90	92.8	
Intermediate level	Methadone	0.05	0.06±0.02	127.4	
	METH	1	1.43±0.32	142.5	125.7
	Amphetamine	0.3	0.41±0.11	135.3	
	THC	50	48.80±3.54	97.6	
Low level	Methadone	0.006	0.01±0.01	118.3	
	METH	0.18	0.24±0.03	133.2	139.8
	Amphetamine	0.16	0.20±0.02	127.5	
	THC	0.1	0.18±0.03	180.0	