Analytical Methods

Electronic Supplementary Information File

A novel modified electrode based on terbium oxide and carbon nanotubes for the simultaneous determination of methyldopa and paracetamol

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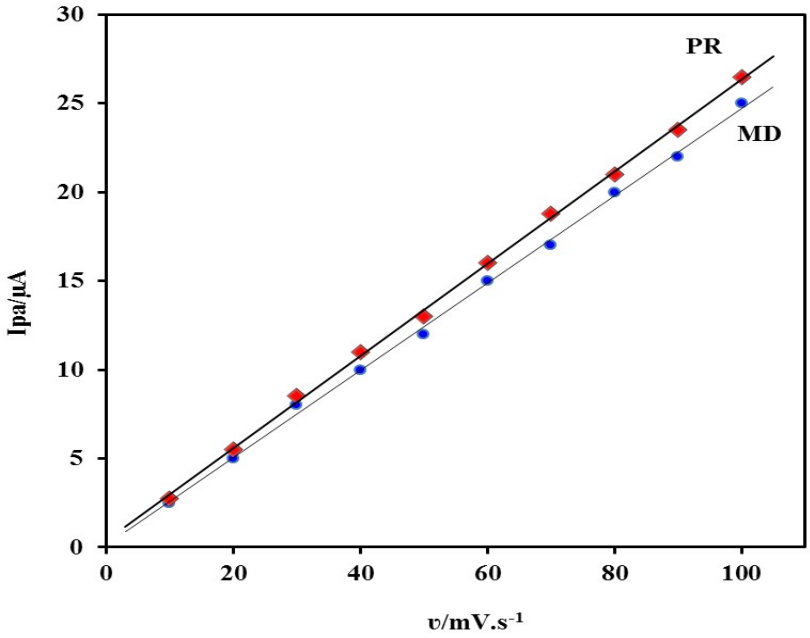

Fig. S1. Plots of anodic peak currents of PR and MD versus scan rate.

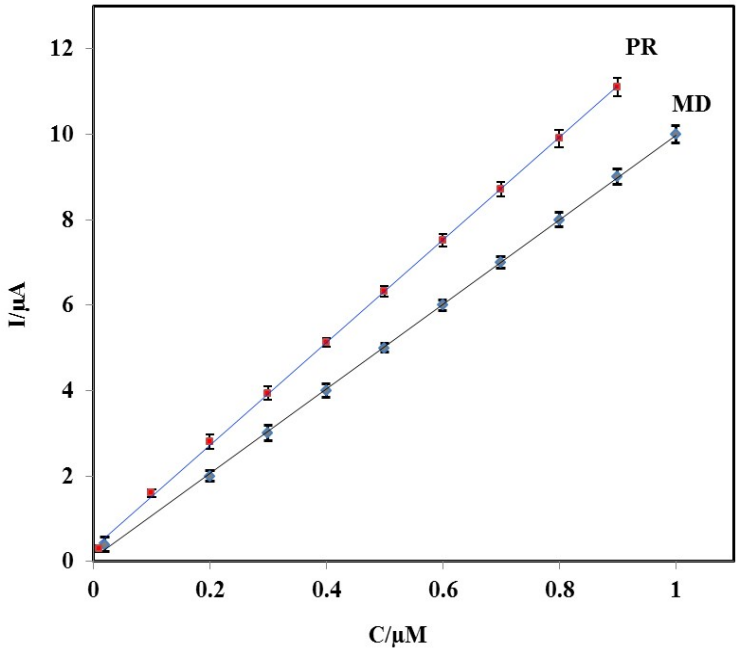

Fig. S2. Plots of peak currents of MD and PR versus concentrations.

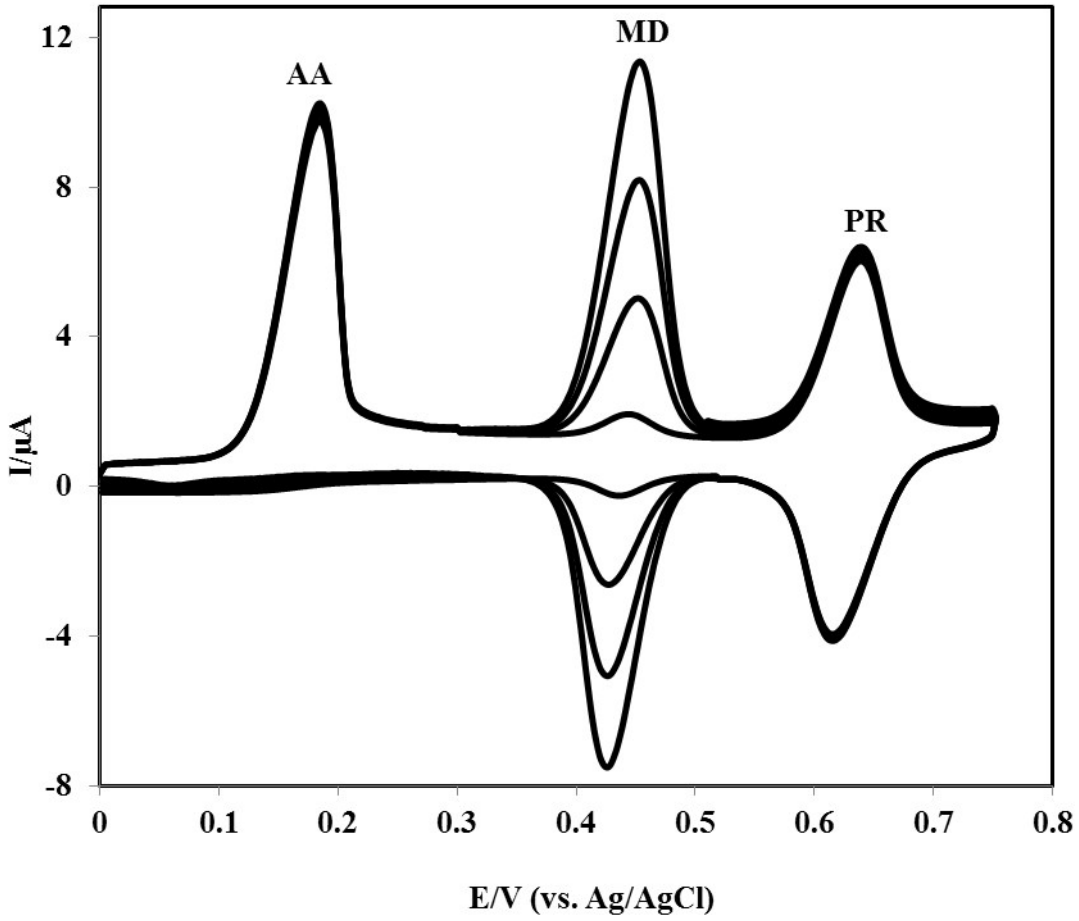

Fig. S3. Cyclic voltammograms of 1.0×10^{-5} M AA, 2.5×10^{-7} M PR and increasing concentrations of MD at Tb_4O_7NPs/CNTs/GCE in 0.1 M PBS at pH 4.0. MD concentrations: 8.0×10^{-8} M; 2.0×10^{-7}; 4.0×10^{-7}; 6.0×10^{-7} M. Scan rate: 50 mV/s.

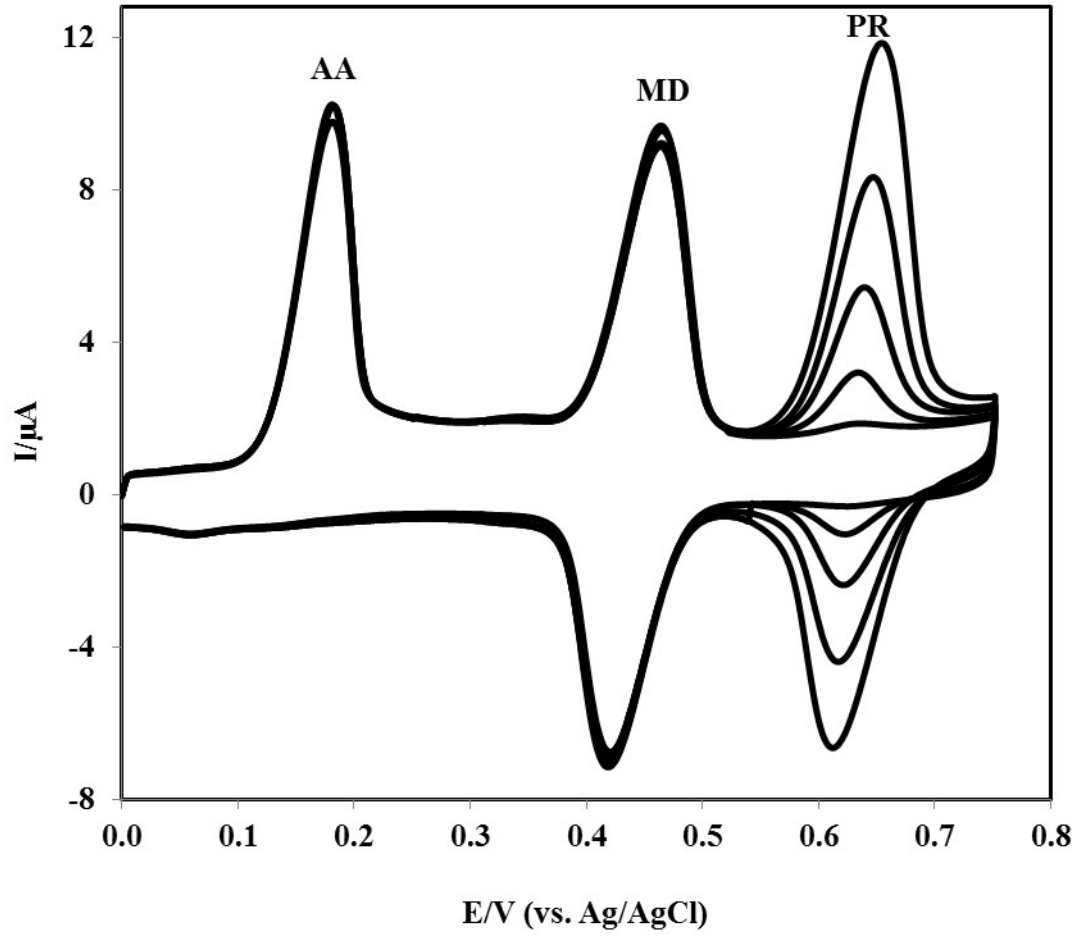

Fig. S4. Cyclic voltammograms of 1.0×10^{-5} M AA, 5.0×10^{-7} M MD and increasing concentrations of PR at Tb_4O_7NPs/CNTs/GCE in 0.1 M PBS at pH 4.0. PR concentrations: 7.5×10^{-8} M; 1.5×10^{-7}; 3.0×10^{-7}; 4.0×10^{-7} M; 7.5×10^{-7} M. Scan rate: 50 mV/s.

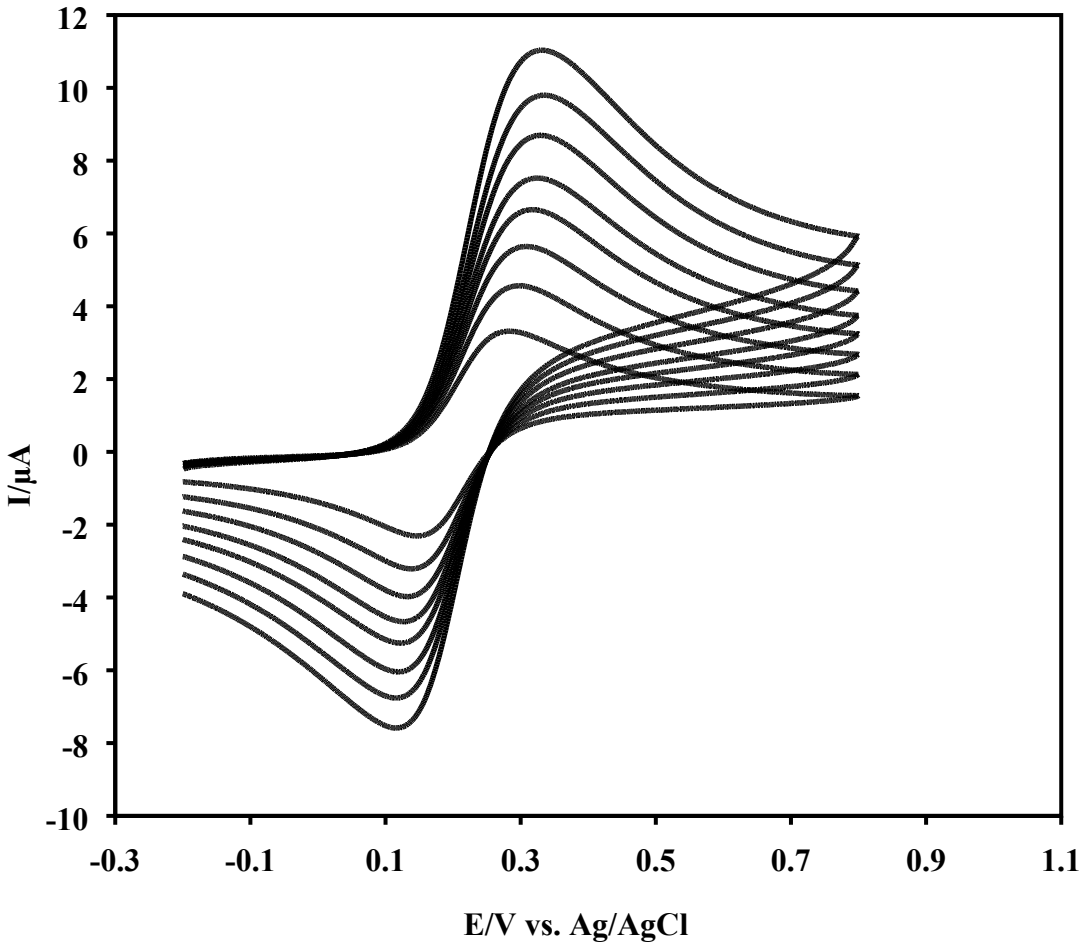

Fig. S5. Cyclic voltammograms of 1 mM potassium ferrocyanide^{-} in 0.1 M KCl, pH 4 at different scan rates using bare GCE. Scan rates: 25 mV;50 mV; 75 mV; 100 mV; 125 mV; 150 mV; 175 mV; 200 mV.

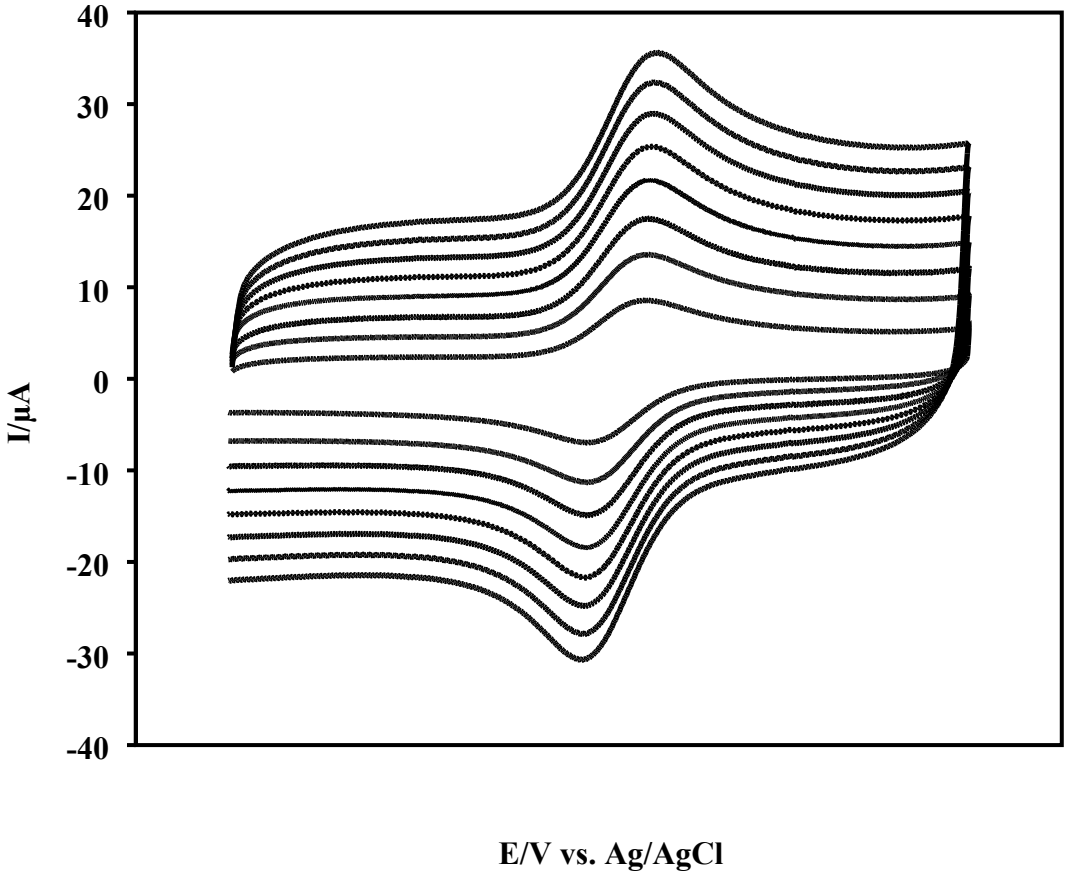

Fig. S6. Cyclic voltammograms of 1 mM potassium ferrocyanide in 0.1 M KCl, pH 4 at different scan rates using CNTs/GCE. Scan rates: 25 mV;50 mV; 75 mV; 100 mV; 125 mV; 150 mV; 175 mV; 200 mV.

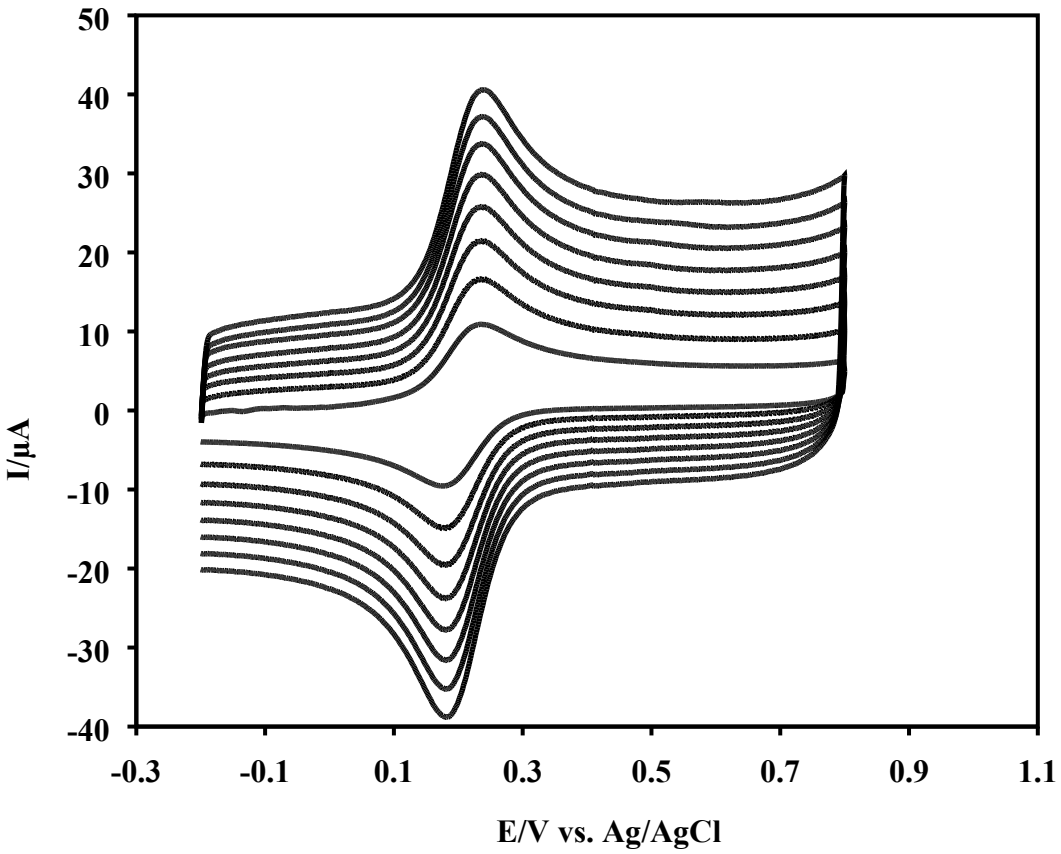

Fig. S7. Cyclic voltammograms of 1 mM potassium ferrocyanide in 0.1 M KCl, pH 4 at different scan rates using Tb_4O_7NPs/CNTs/GCE. Scan rates: 25 mV; 50 mV; 75 mV; 100 mV; 125 mV; 150 mV; 175 mV; 200 mV.

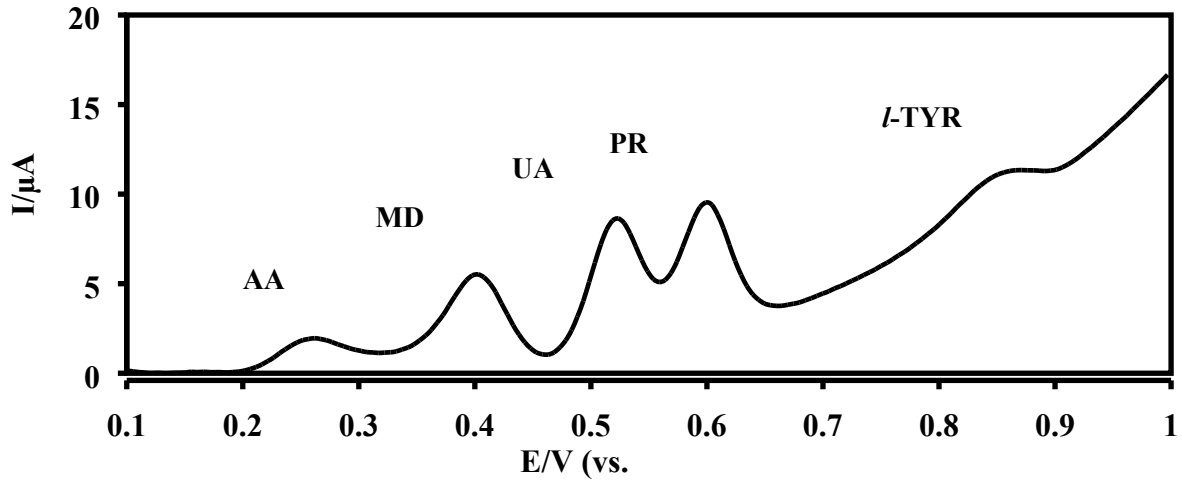

Fig. S8. A SWV of 5.0×10^{-7} M MD and 5.0×10^{-7} M PR at Tb_4O_7NPs/CNTs/GCE in 100 times diluted human urine with 0.1 M PBS at pH 4.0. Frequency: 22 Hz. Step potential: 100 mV/s. Amplitude: 50 mV/s.

Table S1. Peak currents and peak potentials of MD and PR at various electrodes.

	Ipa/ µA		**Epa/V**		**Epc/V**		**ΔEp(Epa-Epc)/mV**		**Peak to peak seperation**
Electrodes	**MD**	**PR**	**MD**	**PR**	**MD**	**PR**	**MD**	**PR**	**Epa(MD)-Epa(PR)/mV**
a) GCE	1.15	2.12	0.58	0.68	0.45	0.58	130	100	100
b) Tb_4O_7NPs/GCE	1.22	2.04	0.52	0.65	0.42	0.60	100	50	130
c) CNTs/GCE	4.43	4.75	0.43	0.63	0.41	0.61	20	20	200
D Tb_4O_7NPs/CNTs/GCE	12.2	12.8	0.41	0.62	0.40	0.61	10	10	210

Table S2. Recoveries of MD and PR in urine sample

Added (nM)		MD			PR		
MD	**PR**	**Found (nM)**	**RSD%**	**Recovery%**	**Found (nM)**	**RSD%**	**Recovery%**
10	10	9.85±0.30	3.0	98.5	10.15±0.36	3.5	101.5
50	50	49.55±1.24	2.5	99.1	51.15±1.53	3.0	102.3
500	500	506.5±10.13	2.0	101.3	515.0±16.48	3.2	103.0

Mean ± standard deviation (n = 5)