

**(Supporting Information)**

**Simultaneous determination of neurotransmitters and neuroprotector in human blood serum and urine samples using diazonium grafted gold nanoparticles film electrode**

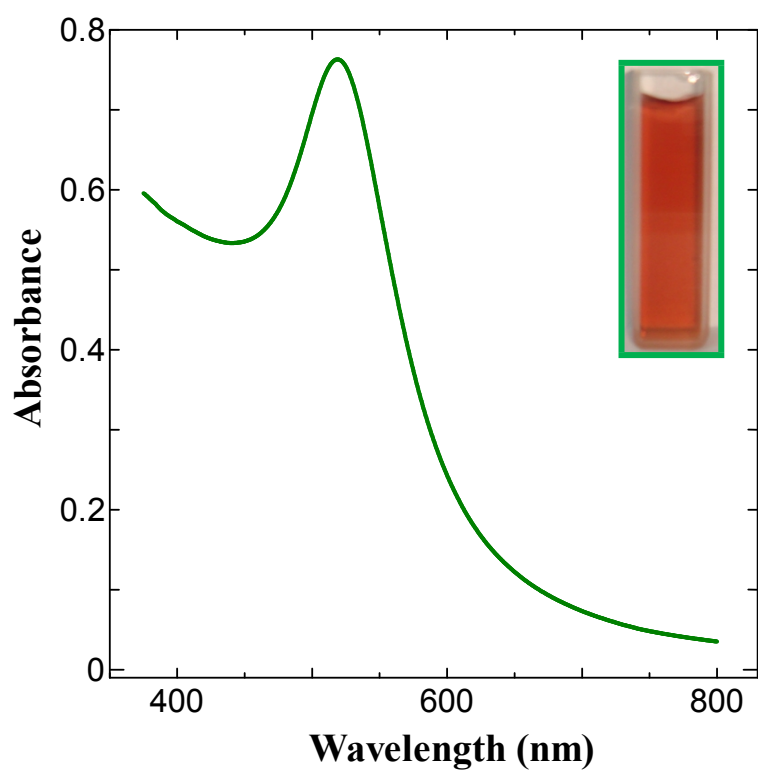
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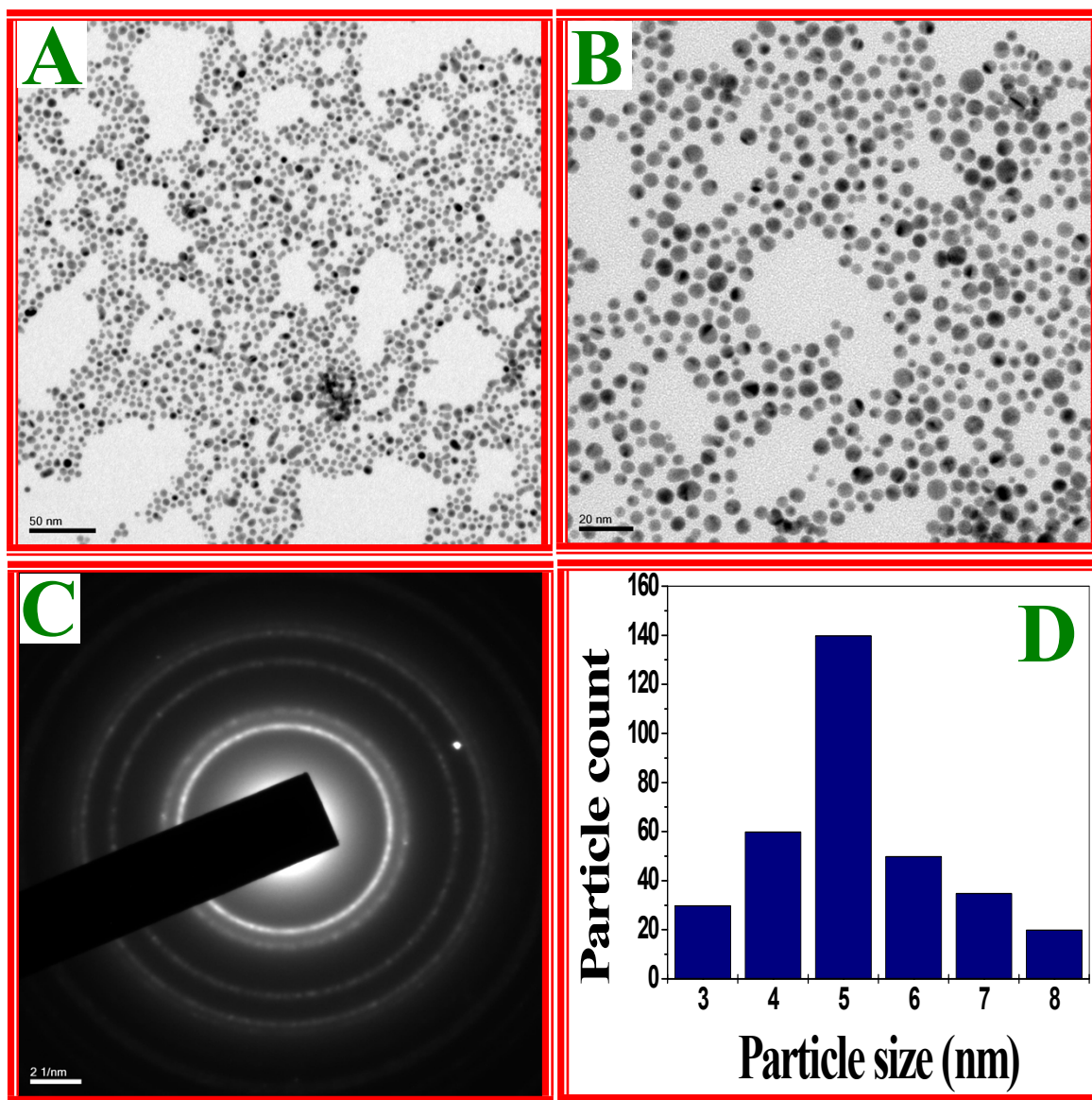
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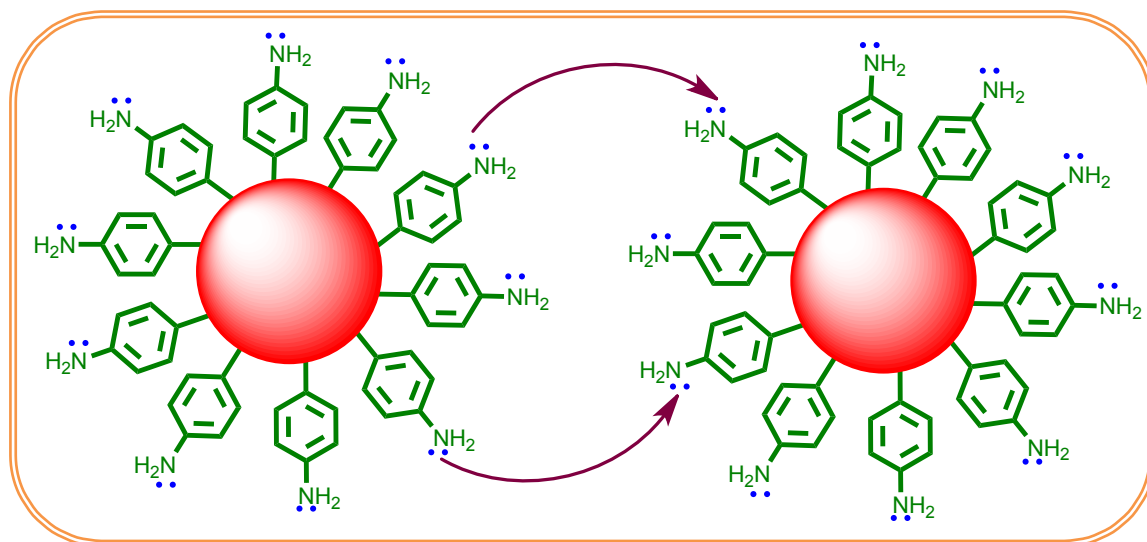
*e-mail: [abrajohn@yahoo.co.in](mailto:abrajohn@yahoo.co.in)*



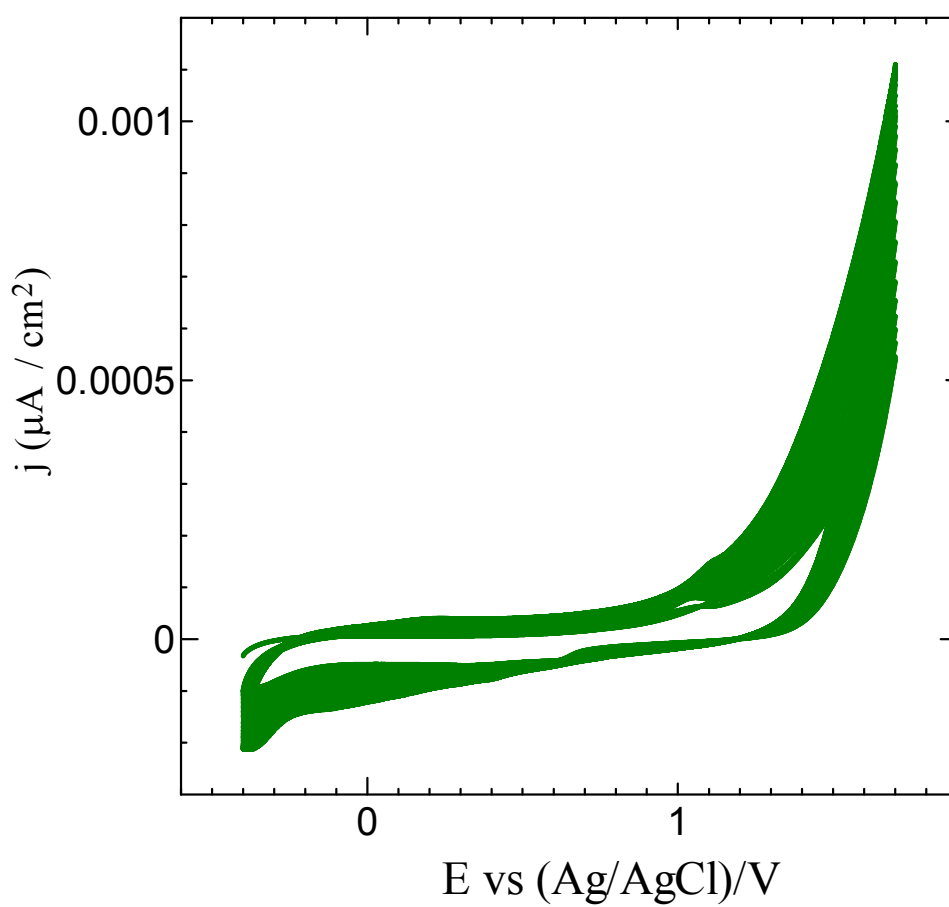
**Figure S1.** Absorption spectrum obtained for AP-AuNPs. **Inset:** Photographic images of AP-AuNPs.



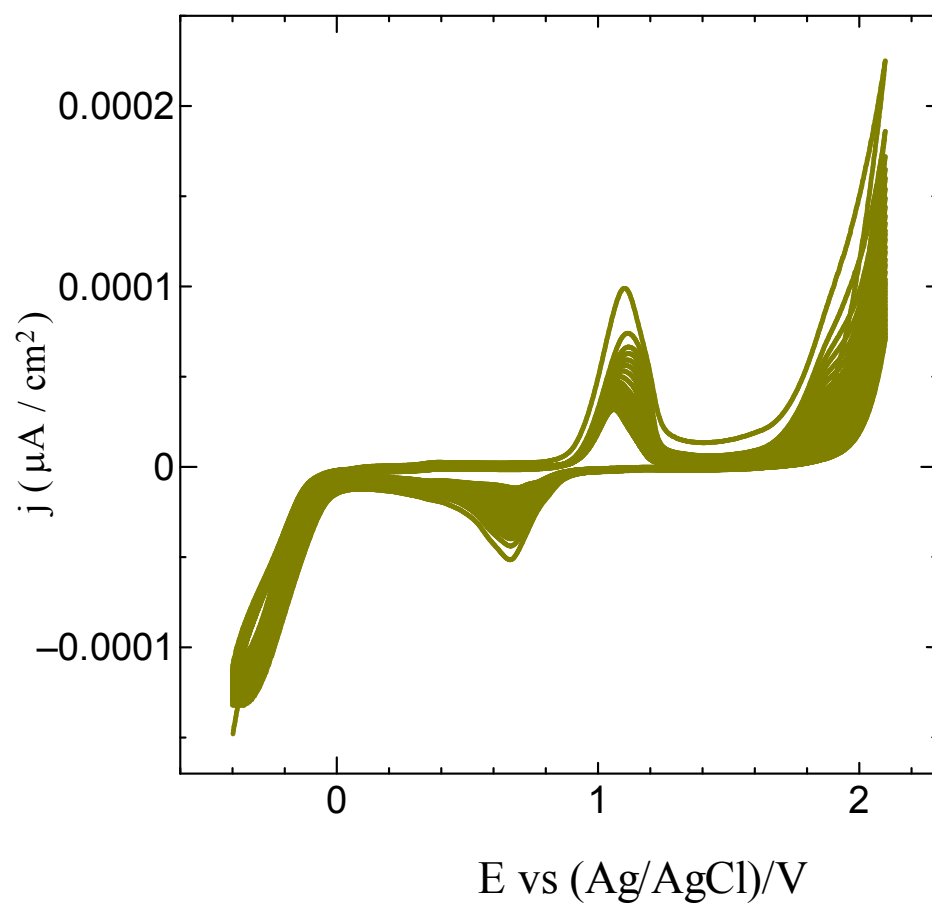
**Figure S2.** HR-TEM images for AP-AuNPs: **(A)** low magnification, **(B)** high magnification, **(C)** selected area electron diffraction pattern and **(D)** particle size distribution histogram.



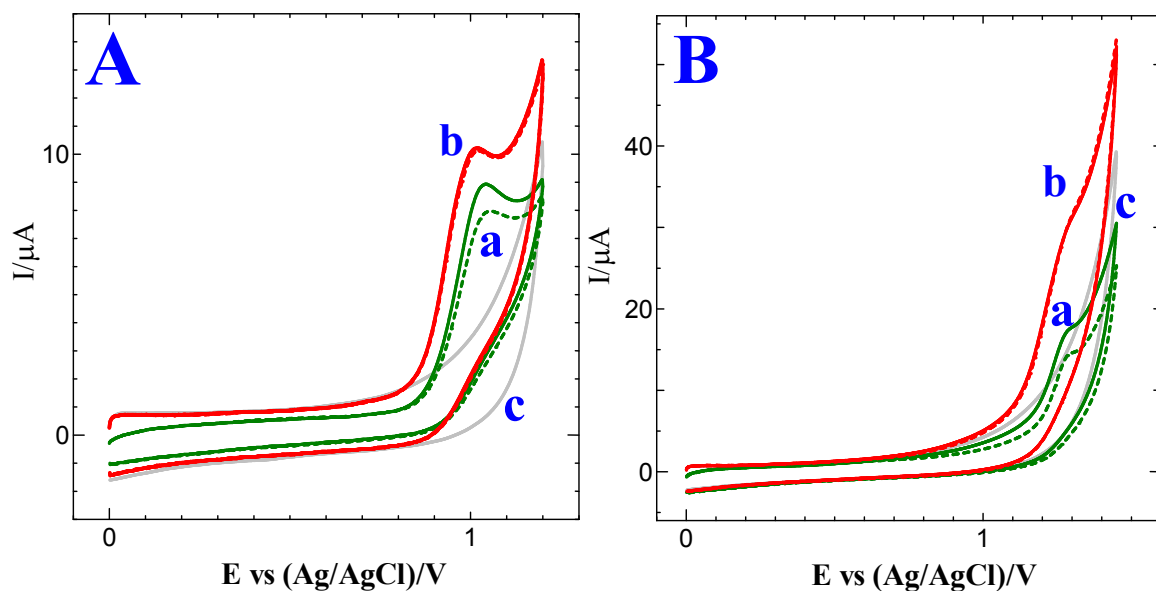
**Scheme S1.** Schematic representation of the stabilization of AP-AuNPs.



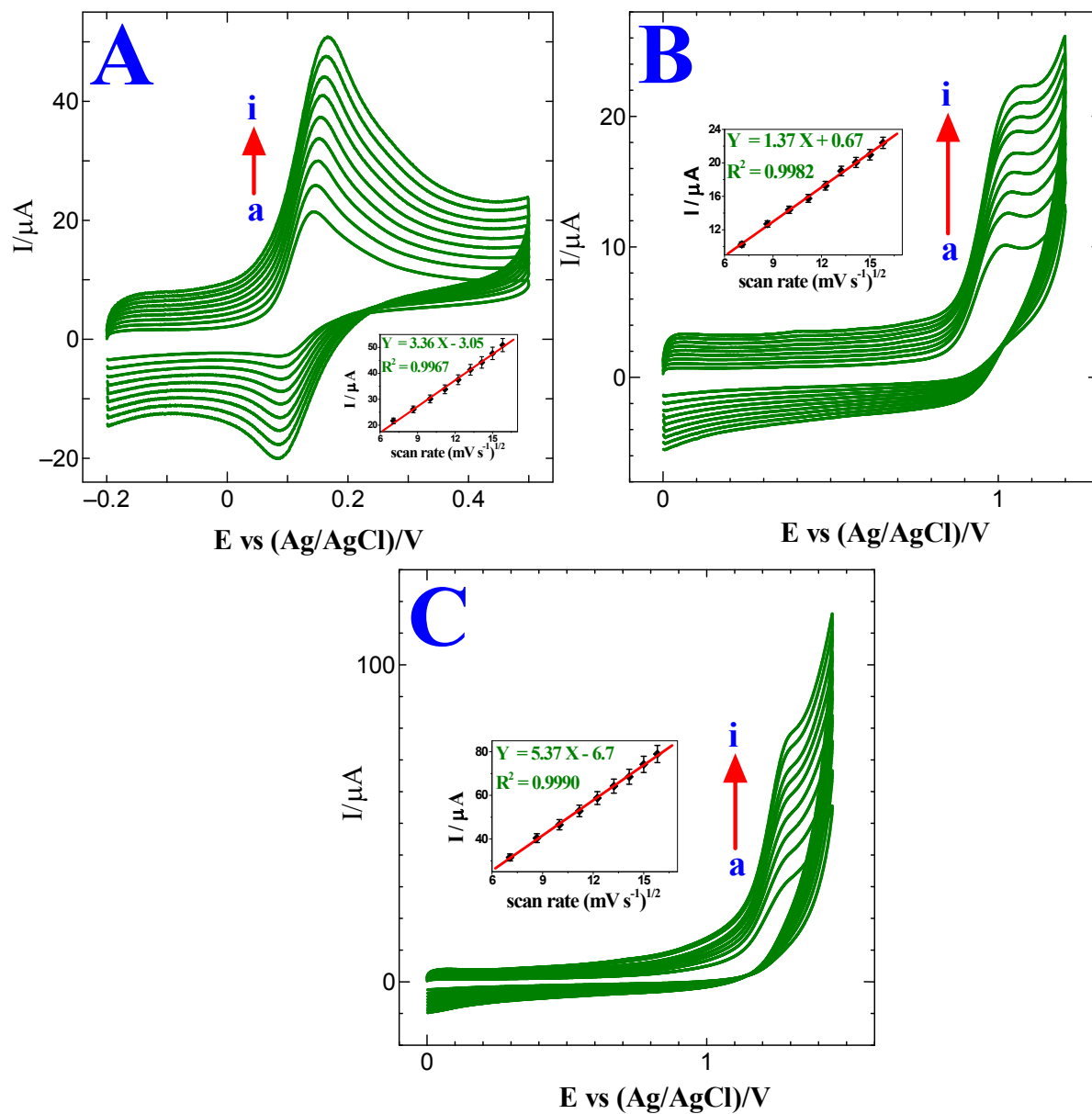
**Figure S3.** Potentiodynamic formation of AP-AuNPs film (30 cycles) on GC electrode in AP-AuNPs containing 100 μM H<sub>2</sub>SO<sub>4</sub> at a scan rate of 50 mV s<sup>-1</sup>.



**Figure S4.** Potentiodynamic formation of AP-AuNPs film (30 cycles) on ITO electrode in AP-AuNPs containing  $100 \mu\text{M H}_2\text{SO}_4$  at a scan rate of  $50 \text{ mV s}^{-1}$ .

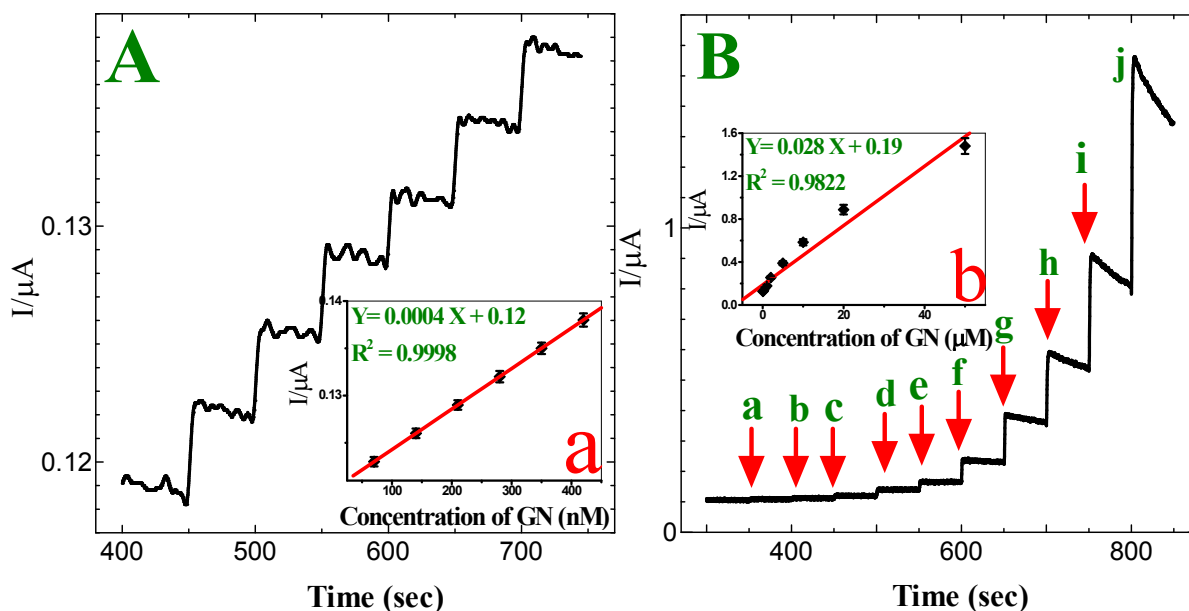


**Figure S5.** (A) CVs obtained for 0.5 mM GN at (a) bare GC and (b) AP-AuNPs film modified electrodes in 0.2 M PB solution (pH 7.2) at a scan rate of  $50 \text{ mV s}^{-1}$  (1st cycle: solid line; 5th cycle: dotted line). CV obtained in the absence of GN (c) at AP-AuNPs film modified electrode in PB solution at pH 7.2 at a scan rate of  $50 \text{ mV s}^{-1}$ . (B) CVs obtained for 0.5 mM AD at (a) bare GC and (b) AP-AuNPs film modified electrodes in 0.2 M PB solution (pH 7.2) at a scan rate of  $50 \text{ mV s}^{-1}$  (1st cycle: solid line; 5th cycle: dotted line). CV obtained in the absence of AD (c) at AP-AuNPs film modified electrode in PB solution at pH 7.2 at a scan rate of  $50 \text{ mV s}^{-1}$ .

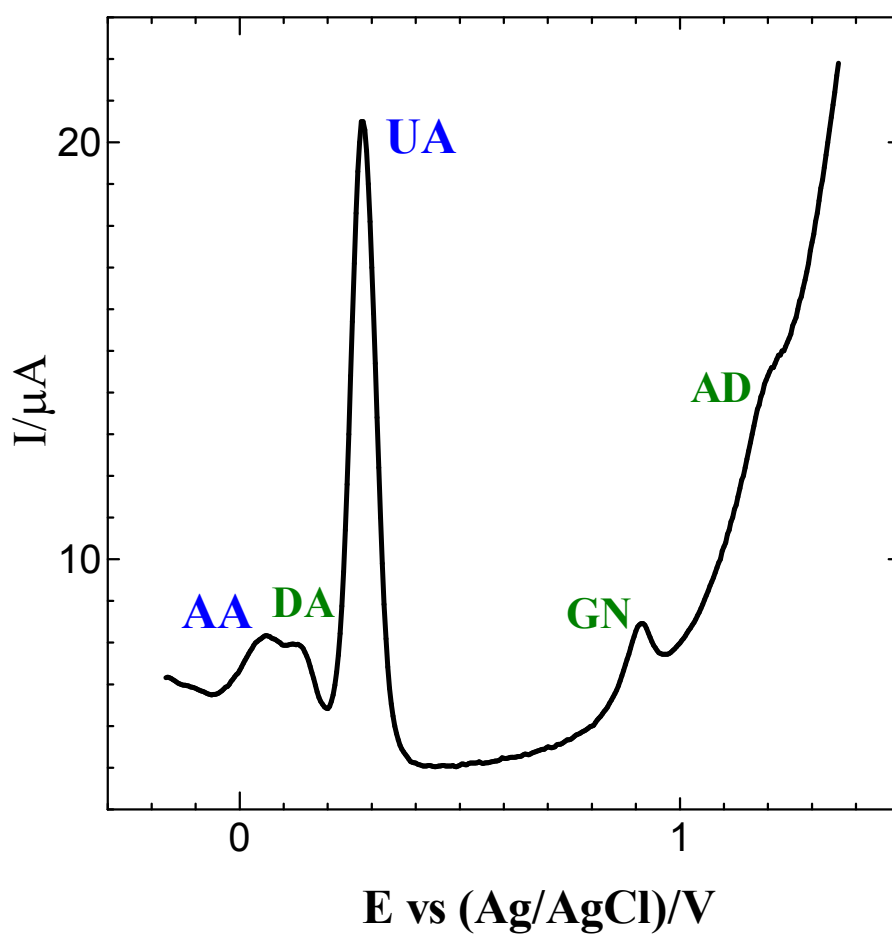


**Figure S6.** CVs obtained for 0.5 mM (A) DA, (B) GN and (C) AD at AP-AuNPs film modified electrode in 0.2 M PB solution (pH 7.2) at scan rates of (a) 0.05, (b) 0.075, (c) 0.1, (d) 0.125, (e) 0.15, (f) 0.175, (g) 0.2, (h) 0.225 and (i) 0.25  $\text{Vs}^{-1}$ . **Insets:** Plot of the anodic peak current vs. square root of scan rate.





**Figure S7. (A)** Amperometric *i-t* curve for the determination of GN at AP-AuNPs film modified electrode in 0.2 M PB solution (pH 7.2). Each addition increases the concentration of 70 nM of GN at regular interval of 50 s.  $E_{app} = +1.2$  V. **Inset (a):** Plot of concentration of GN vs. current. **(B)** Amperometric *i-t* curve for the determination of GN at AP-AuNPs film modified electrode in 0.2 M PB solution (pH 7.2). Each addition increases the concentrations of (a) 0.07 (b) 0.1 (c) 0.2 (d) 0.5 (e) 1 (f) 2 (g) 5 (h) 10 (i) 20 and (j) 50  $\mu\text{M}$  GN at AP-AuNPs film modified electrode in 0.2 M PB solution (pH 7.2) at a regular interval of 50 s.  $E_{app} = +1.2$  V. **Inset (b):** Plot of concentration of GN vs. current.



**Figure S8.** DPVs obtained for 1  $\mu\text{M}$  of DA, 10  $\mu\text{M}$  of GN and 10  $\mu\text{M}$  of AD in the presence of each 200  $\mu\text{M}$  AA and UA at AP-AuNPs film modified electrode in 0.2 M PB solution.

**Table S1**

Simultaneous determination of DA, GN and AD in human blood serum and urine samples

Samples	Added ( $\mu\text{M}$ )			Found ( $\mu\text{M}$ ) and (Recoveries)		
	DA	GN	AD	DA	GN	AD
Serum 1	20	120	30	19.8	118.3	29.8
				99%	98.6%	99.3%
Serum 2	20	100	40	19.9	99.7	39.8
				99.5%	99.7%	99.5%
Urine 1	7	50	30	6.9	49.8	29.7
				98.6%	99.6%	99%
Urine 2	15	50	40	14.9	49.5	39.9
				99.3%	99%	99.8%