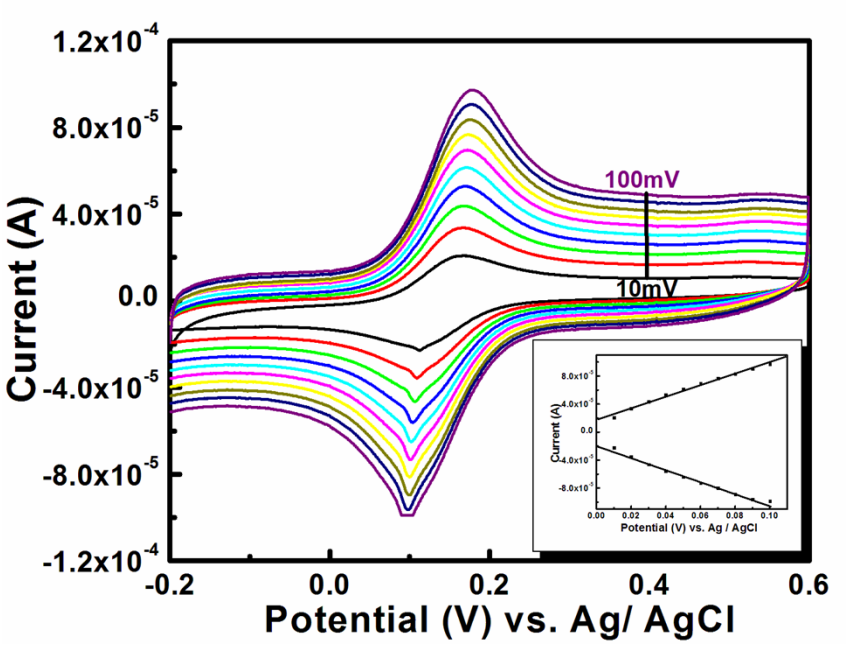

Fig.S1 CV behavior of the α–Fe_2O_3/MWCNT/AuNPs modified GC electrode measured at different scan rates in 1 mM $[Fe(CN)_6]^{3-/4-}$ in 0.1M KCl solution

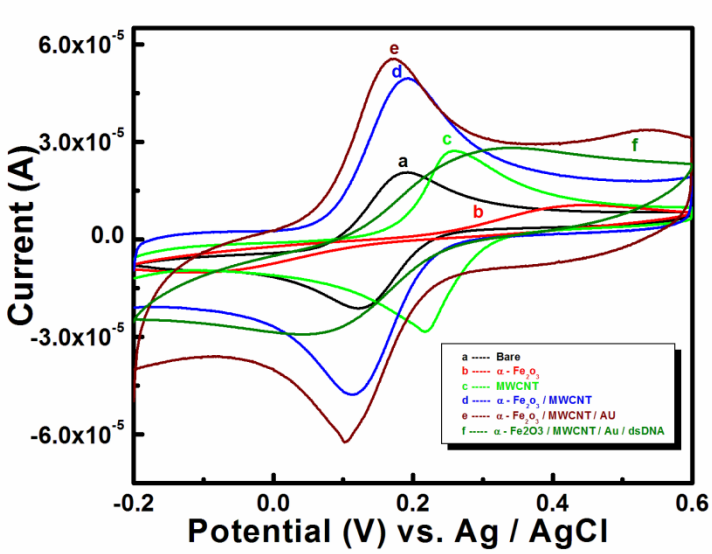

Fig.S2 CV behavior of (a) bare (b) α–Fe_2O_3 (c) MWCNT (d) α–Fe_2O_3/MWCNT (e) α–Fe_2O_3/ MWCNT/AuNPs (f) α–Fe_2O_3/MWCNT/AuNPs/ds-DNA modified GC electrode measured at 50mVs^{-1} in 1 mM $[Fe(CN)_6]^{3-/4-}$ in 0.1M KCl solution

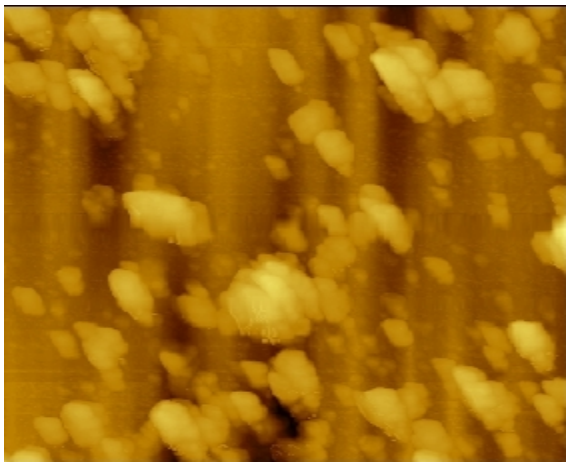

Fig.S3 AFM image of α–Fe_2O_3 /MWCNT composite

Table S1 Effect of interference on RF determination for the α–Fe_2O_3/MWCNT/AuNPs modified electrode

Interfering species	Interferents concentration (μM)	Concentration ratio (Riboflavin: Interferents)	Recovery (%)
L-dopa	10	1:10	95
Serotonin	10	1:10	94
Epineprine	10	1:10	97
Cystamine	10	1:10	94
Dopamine	10	1:10	105
Tyrosine	10	1:10	102
Fe	100	1:100	94
Mg	100	1:100	108
Ca	100	1:100	96
K	100	1:100	95
NO_3	100	1:100	93
NH_4	100	1:100	96
Cl	100	1:100	95

Table S2

Determination of the riboflavin content in commercial pharmaceutical products by SWV on the α–Fe_2O_3/MWCNT/AuNPs modified electrode.

Sample	Reported content (mg)	Content found (mg)	Recovery %
1. multivitamin tablet	1.6	1.5	93.8
2. multivatimin capsule	2	1.81	90.5
3. Milk powder	0.78	0.85	91.7

Table S3

Comparison of the efficiency of reported electrochemical methods in the determination of RF

Electrode	limit of detection (M)	linear range (M)	reference
Aza / PCPE	5.3×10^{-10}	$1.33 \times 10^{-9} – 1.86 \times 10^{-4}$	[1]
P3MT/GCE	5.0×10^{-8}	$1.0 \times 10^{-7} – 2.0 \times 10^{-4}$	[2]
CILE	1.0×10^{-10}	$8.0 \times 10^{-10} – 1.1 \times 10^{-7}$	[3]
Ag amalgam film	2.4×10^{-8}	$1.33 \times 10^{-7} – 8.0 \times 10^{-6}$	[4]
Ds-DNA/ PCE	9.0×10^{-7}	$1.33 \times 10^{-6} – 1.86 \times 10^{-4}$	[5]
AgSAEs	8.2×10^{-10} (m – AgSAE) and 1.3×10^{-9} (p-AgSAE)	-	[6]
DNA/CNT	5.31×10^{-13}	-	[7]
WO3 – TiO_2	1.87×10^{-7}	3.23×10^{-7} - 4.0×10^{-5}	[8]
Cr- SnO2	1.07×10^{-7}	0.2×10^{-6} - 1.0×10^{-4}	[9]

References for Table S3

1 M. Kotkar, P.B. Desai and A.K. Srivastava, *Sensor Actuat.,* B, 2007, **124,** 90.
2. H. Zhang, J. Zhao, H. Liu and H. Wang, *Int. J. Electrochem. Sci.,* 2010, **5***,* 295.
3 A. Safavi,N. Maleki, H. Ershadifar and F.Tajabadi, *Anal. Chim. Acta,* 2010, **674,** 176.
4 Bas .S.Lakubowska and M.Girski, 2011,*Talanta,* **84**,1032.
5 A. Ensafi, E Heydari-Bafrooei and M. Amini, *Biosens. Bioelectron.,* 2012, **31**, 376.
6 L.Bandzuchova, R. Selesovska, T.Navratil and J. Chylkov, *Electrochim. Acta,* 2012, **75**, 316.
7 Y. Ly, H.S. Yoo, J.Y. Ahn and K.H. Nam, *Food Chem.,* 2011, **127**, 270.
8 Y. Li,P.C Hsu and S.M. Chen, *Sensor Actuat. B,* 2012,**174**,427.
9 N. Lavanya, S. Radhakrishnan, C. Sekar,and M. Navaneethan. *Analyst*, 2013, **138**, 2061