Electronic Supplementary Material (ESI) for RSC Advances.

Supporting information

Highly-sensitive label-free immunosensor for tumor necrosis factor α based on Ag@Pt core-shell nanoparticles supported on MWCNT as efficient electrocatalyst nanocomposite

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Fig. S1

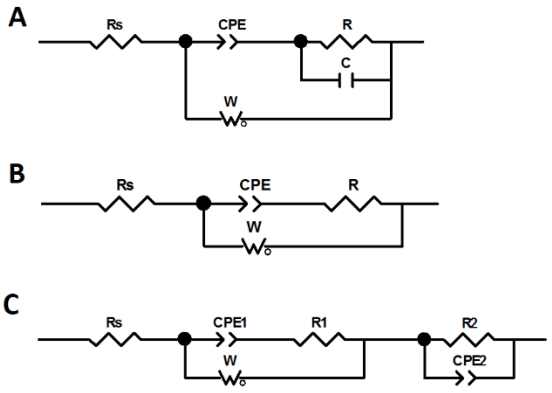

Fig.S1 Equivalent circuits that fit with obtained EIS spectra.

Fig. S2

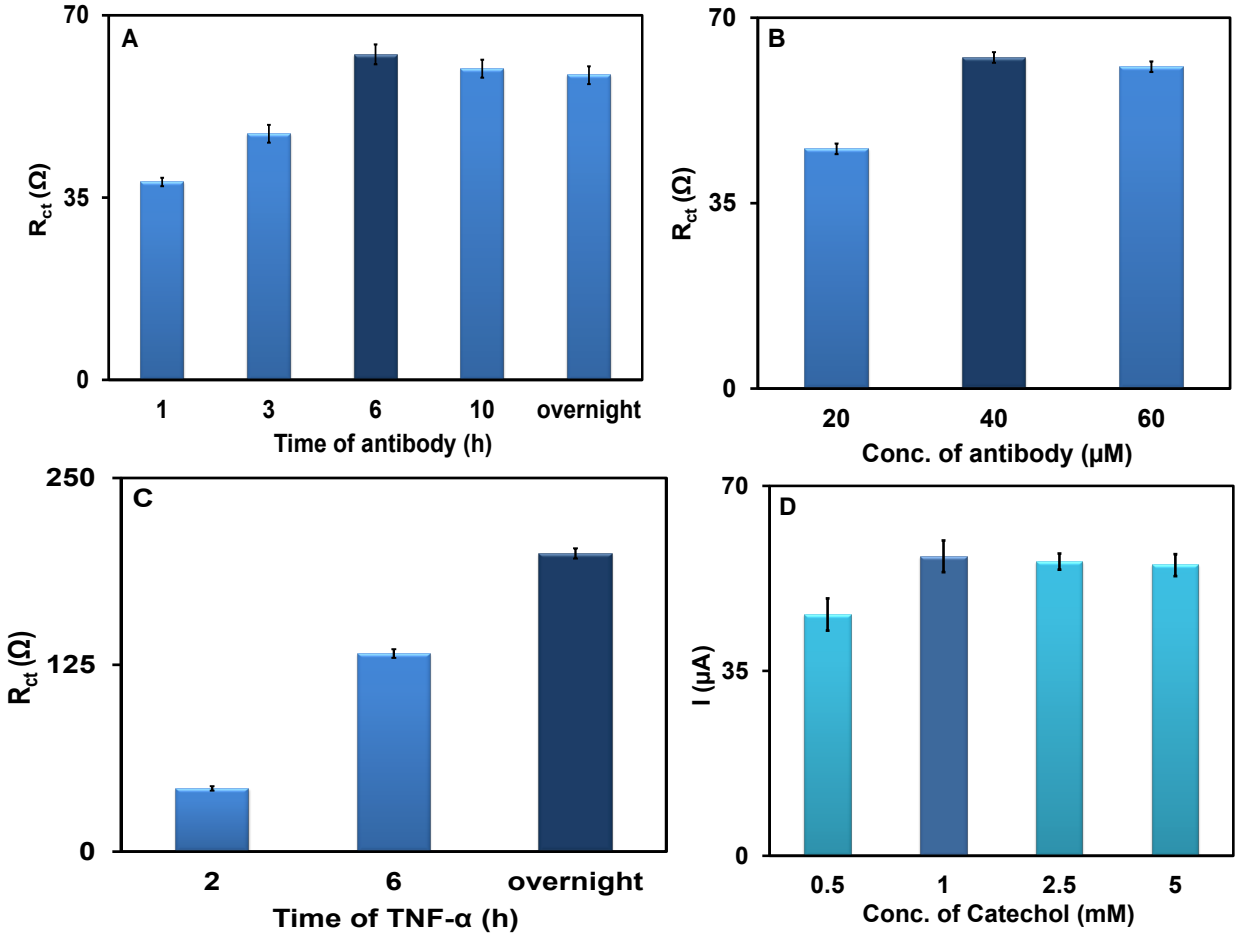

Fig. S2 Optimization of: (A) incubation time and (B) the concentration of antibody, (C) incubation time of TNF-α protein. EIS responses were performed in 10 mM $[Fe(CN)_6]^{3-/4-}$ in 0.1 M PBS (pH 7.4). (D) Optimization of catechol concentration. CV responses of the sensor at different concentration of catechol in 0.1 M PBS (pH 7.4). The values reported in the figures represent the mean value of 6 different measurements.

Table S1.

Table S1. Characteristics of different TNF-α immunosensors reported in the literature.

Technique	Method	LOD (pg mL^{-1})	Precision, RSD %	Samples	Ref.
Impedance spectroscopy	Capacitor arrays	25	-	-	[1]
Electrochemistry	surface-initiated atom transfer radical polymerization	3.9	-	-	[2]
Electrochemistry	Ferrocene carboxylic acid functionalized self-assembled peptide nanowire	2	5.4	Human serum	[3]
Electrochemistry	Alkaline phosphatase functionalized nanospheres	10	5.7	Human serum	[4]
Electrochemistry	Aptasensor, methylene blue labelling	10000	-	Human blood	[5]
Electrochemistry	Conductive polymer	3.2	3.4	Human serum	[6]
QCM	MBs acustical amplification under magnetic field	25000		-	[7]
SPR	Gold nanoparticle enchancement	11.6	-	Human serum	[8]
Electrochemistry	bimetallic Ag@Pt core-shell nanoparticles supported on MWCNTs and chitosan	1.6	2.2	Human serum	This work

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