

**Supporting Information**  
**One-pot synthesis of dopamine dithiocarbamate functionalized gold nanoparticles for quantitative analysis of small molecules and phosphopeptides in SALDI- and MALDI-MS**

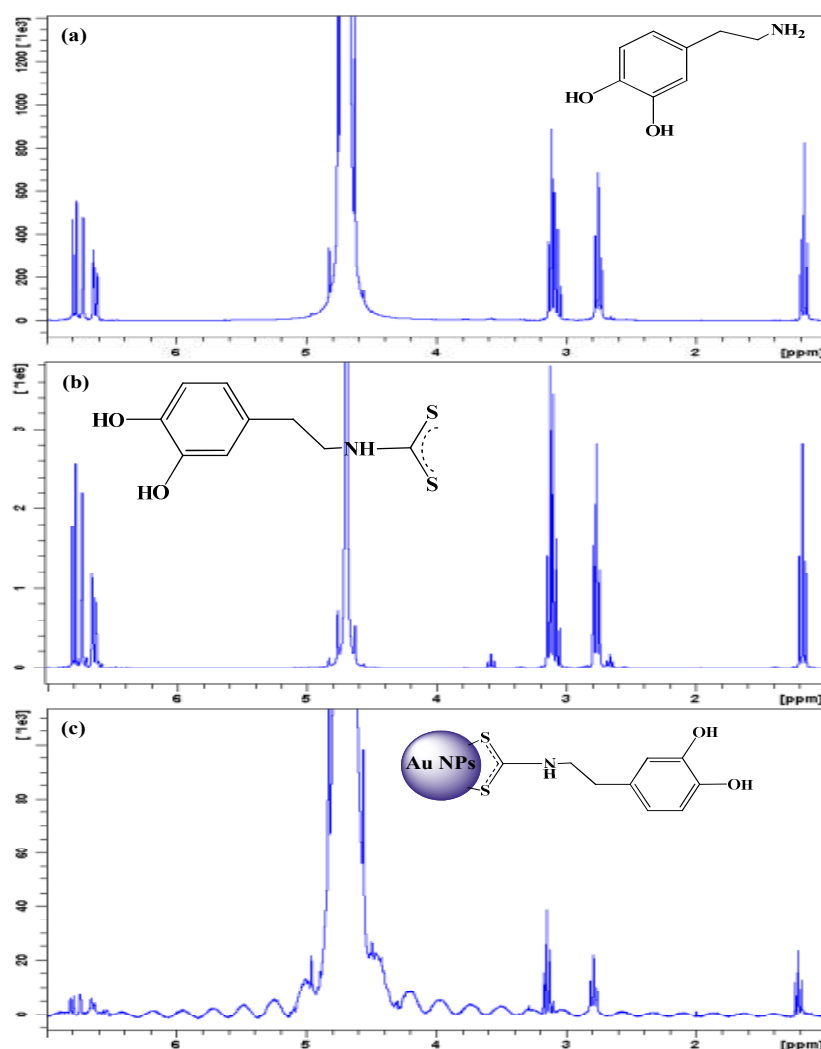
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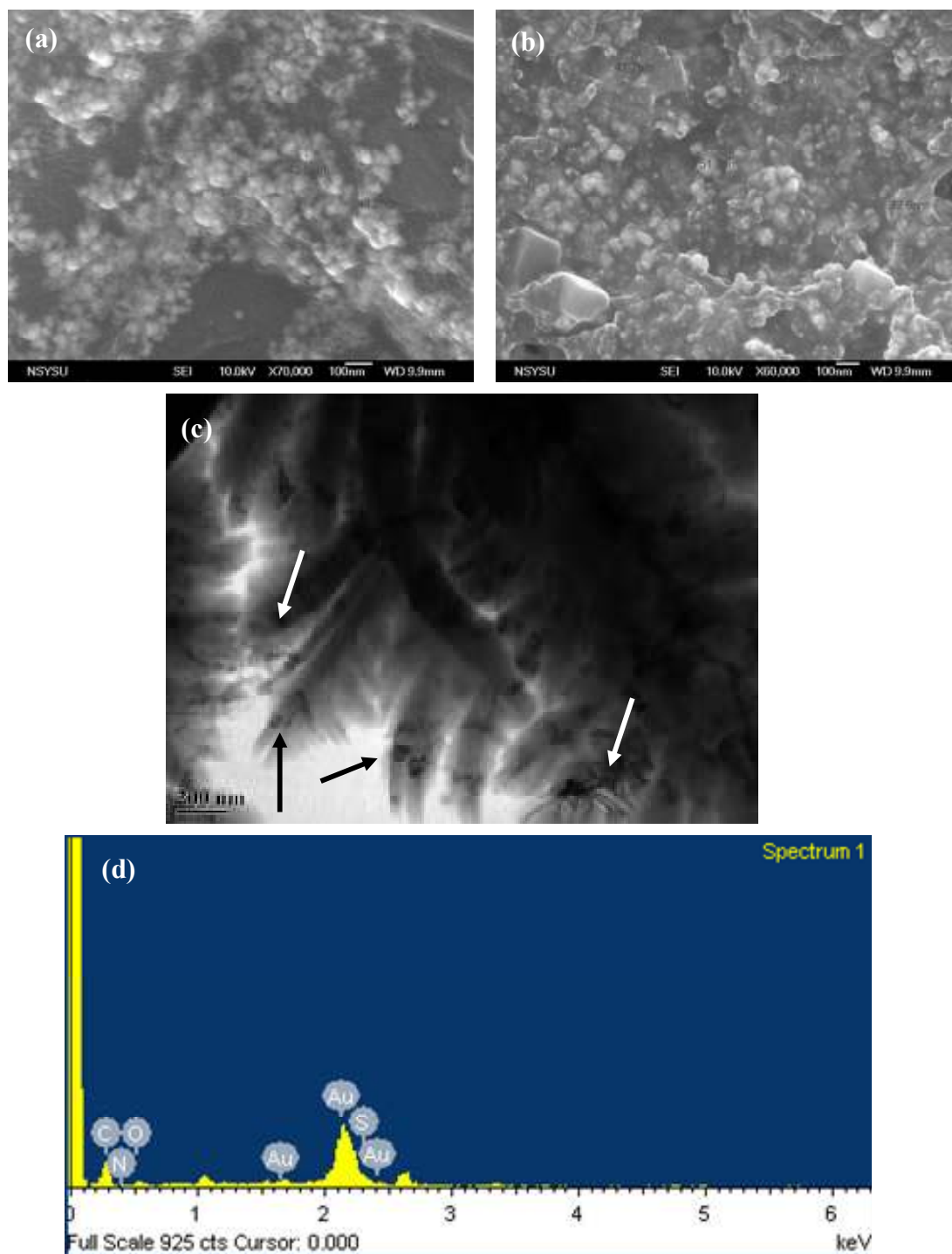
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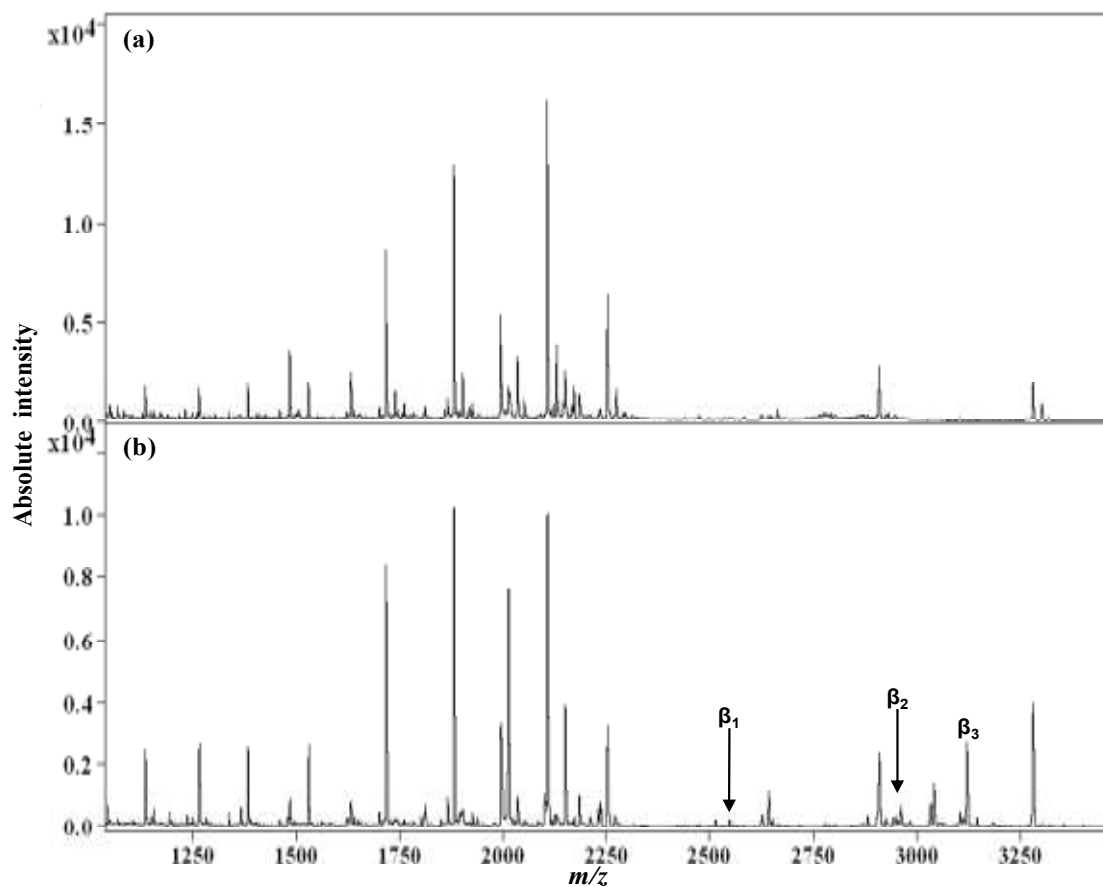
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**Figure S1.** <sup>1</sup>H NMR spectra of (a) pure dopamine (b) dopamine dithiocarbamate and (c) DDTC-Au NPs.



**Figure S2.** SEM images of (a) bare Au NPs and (b) DDTC-Au NPs. (c) TEM image of DDTC-Au NPs. (d) The energy dispersive X-ray spectra (EDXS) of DDTC-Au NPs and the spectrum has shown the elemental signals of dopamine dithiocarbamate functionalized-Au NPs.



**Figure S3.** MALDI mass spectra of microwave tryptic digest of  $\beta$ -casein at 50 s microwave irradiating time using (a) 2,5-DHB and (b) using DDTC-Au NPs as affinity probes along with 2,5-DHB as the matrix. Microwave conditions are same those shown in Figure 6.

**Table S1.** List of phosphopeptides ion peaks detected from microwave tryptic digests of  $\alpha$ -casein and  $\beta$ -casein using DDTC-Au NPs as affinity probes.

Protein	Peak number	Observed <i>m/z</i>	Phosphopeptide sequences
$\alpha$ -casein	$\alpha_1$	924.4	DIGpSESTEDQAMEDIK ( $\alpha$ -S1/58-73)
	$\alpha_2$	952.7	EKVNELpSKDIGpSESTEDQAMEDIK ( $\alpha$ -S1/52-73)
	$\alpha_3$	976.2	YKVPQLEIVPNpSAEER ( $\alpha$ -S1/119-134)
	$\alpha_4$	1003.3	NANEEEYSIGpSpSpSEEpSAEVATEEVK ( $\alpha$ -S2/61-85)
	$\alpha_5$	1103.7	GNAEGpSpSDEEGKLVIDEPAK ( $\alpha$ -S1/180-188)
	$\alpha_6$	1251.6	TKVIPYVRYL ( $\alpha$ -S2-(213-222)
	$\alpha_7$	1267.1	YLGYLEQLLR ( $\alpha$ -S1/106-115)
	$\alpha_8$	1337.5	VNELpSKDIGpSEpSTEDQAMEDIK ( $\alpha$ -S1/52-73)
	$\alpha_9$	1367.1	QM#EAEpSIpSpSpSEIIVPNpSVEQK ( $\alpha$ -S1/74-94)
	$\alpha_{10}$	1384.5	FFVAPFPEVFGK ( $\alpha$ -S1/38-49)
	$\alpha_{11}$	1410.3	EQLpSTpSEENSK ( $\alpha$ -S2/141-151)
	$\alpha_{12}$	1660.1	VPQLEIVPNpSAEER ( $\alpha$ -S1/121-134)
	$\alpha_{13}$	1759.8	HQGLPQEVLNENLLR ( $\alpha$ -S1/23-37)
	$\alpha_{14}$	1847.4	DIGpSETEDQAMEDIK ( $\alpha$ -S1/58-73)
	$\alpha_{15}$	1951.6	YKVPQLEIVPNpSAEER ( $\alpha$ -S1/119-134)
	$\alpha_{16}$	2080.1	KYKVPQLEIVPNpSAEER ( $\alpha$ -S1/118-134)
	$\alpha_{17}$	2105.0	TDAPSFSDIPNPIGSENSEK ( $\alpha$ -S1/189-208)
	$\alpha_{18}$	2618.7	NTMEHVpSpSpSEESIIPSQETYK ( $\alpha$ -S1/17-36)
	$\alpha_{19}$	2678.0	VNELpSKDIGpSEpSTEDQAMEDIK ( $\alpha$ -S1/52-73)
	$\alpha_{20}$	3008.1	NANEEEYSIGpSpSpSEEpSAEVATEEVK ( $\alpha$ -S1/46-70)
$\beta$ -casein	$\beta_1$	2556.9	FQpSEEQQQTEDELQDKIHPF ( $\beta$ /33-52)
	$\beta_2$	2965.6	ELEELNVPGEIVepSLpSpSpSEESITR ( $\beta$ /2-25)
	$\beta_3$	3122.5	RELEELNVPGEIVepSLpSpSpSEESITR ( $\beta$ /1-25)

pS refers to phosphorylated serine unit; M# oxidation on methionine.