Electronic Supplementary Material (ESI) for Analytical Methods.

SUPPLEMENTARY DATA

Cause of death determination using Paper based microfluidic device as colorimetric probe

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Synthesis of silver nanoparticles

In the present study, silver nanoparticles were synthesized in CEM Discover Benchmate microwave using single mode having continuous power at 2.45 GHz. In brief, 20 ml of ethylene glycol was taken into a 50 ml reaction flask containing 1 mM silver nitrate. In this solution, (1M) tri-sodium citrate solution was added dropwise until the solution color changes to yellow, indicating the formation of silver nanoparticles. These synthesized silver nanoparticles were characterized by UV-Vis spectrophotometer, FT-IR, TEM and DLS.

Alprazolam extraction from body fluids

For the extraction of ALP from VH and blood was spiked with 10 ng/ml ALP, 500 µl sample was mixed with 500 µl of deionized water, followed by addition of 1 ml aqueous 0.1 M zinc sulphate solution. The mixture was then vortex-mixed for 1 min and kept at room temperature (37ºC) for 15 min. The resultant solution was then centrifuged at 12,500 rpm for 5 min. After centrifugation, organic phase was collected, filtered and evaporated to dryness. The residue was reconstituted by adding 1 ml of methanol and the extract was further used for analysis.

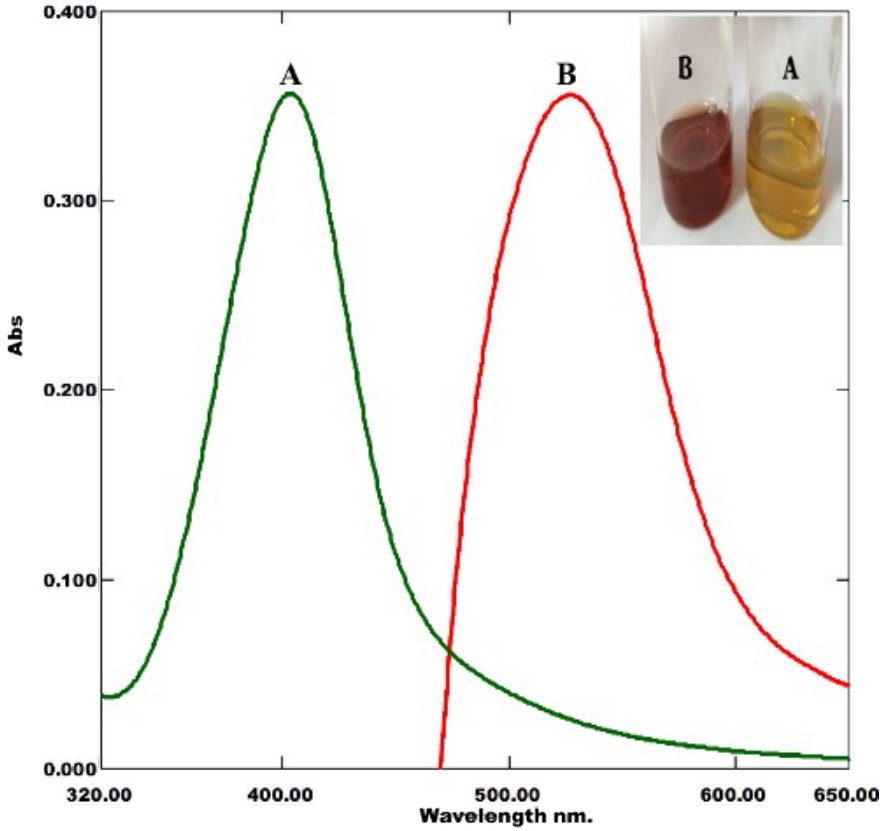

Figure S1 Showing the UV-Vis spectra of the

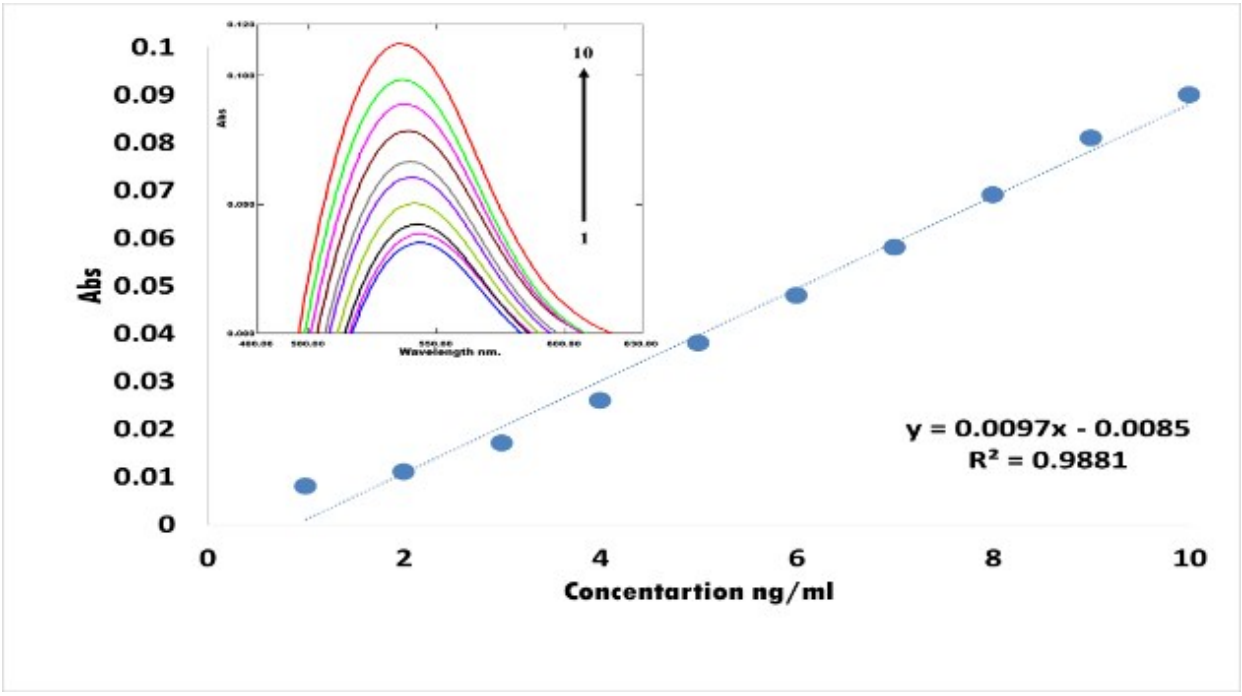

Figure S2 Linearity of ALP (1-10 ng/ml) with AgNPs having R^2=0.9881 and inset UV-Visible spectra of AgNPs in presence of ALP concentrations (1 to 10 ng/ml).

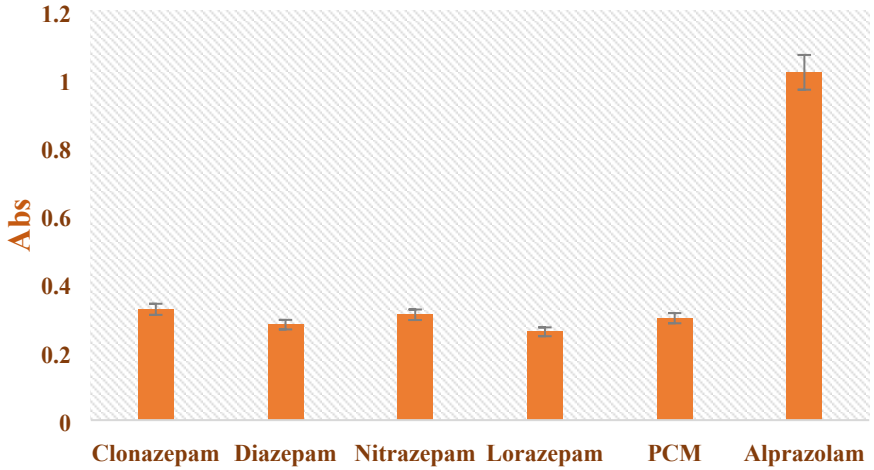

Figure S3 Relative absorbance change of AgNPs at 520 nm in the presence of clonazepam, diazepam, nitrazepam, lorazepam, paracetamol (PCM) and ALP.

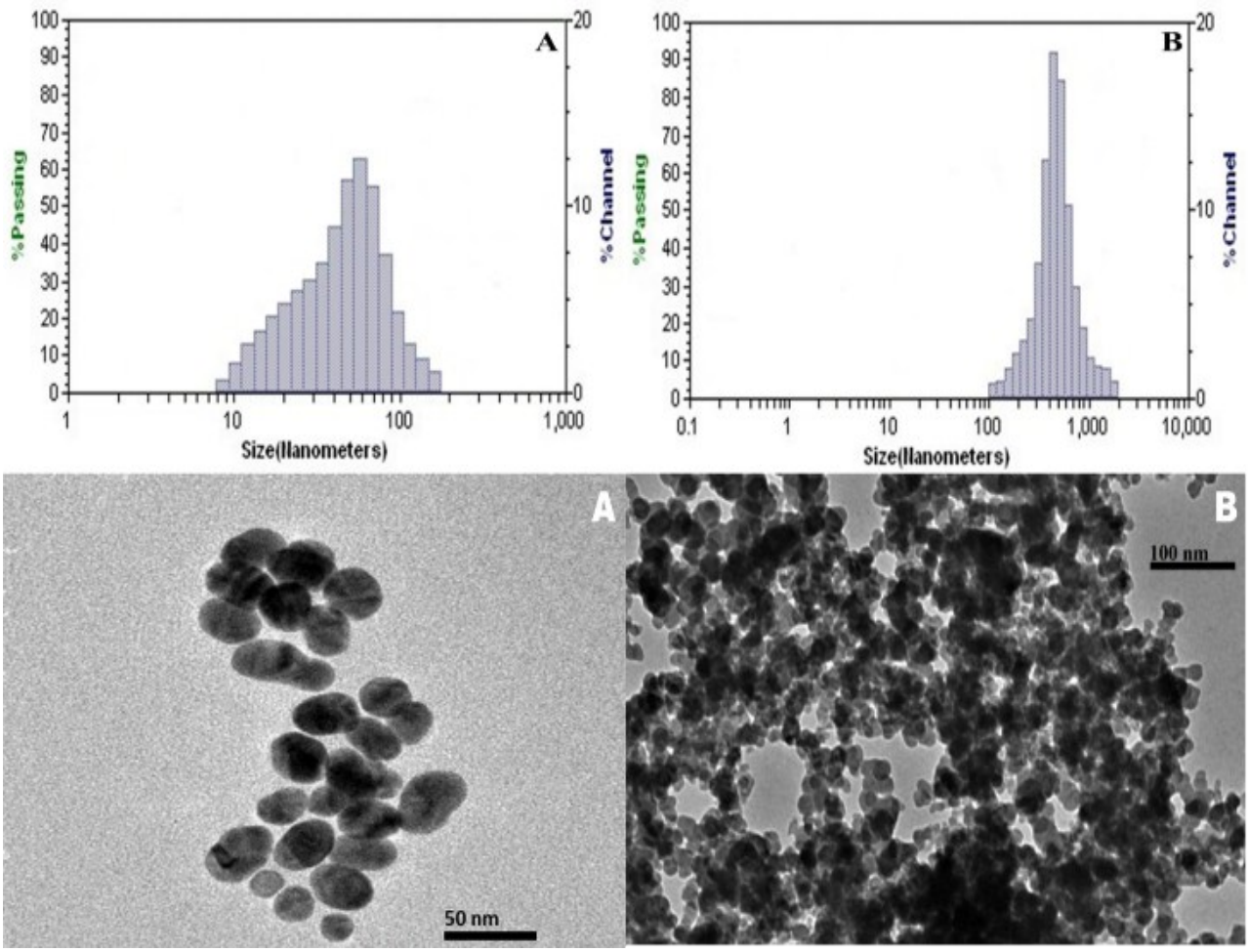

Figure S4 Size distribution of silver nanoparticle (A) in the presence of ALP (B).

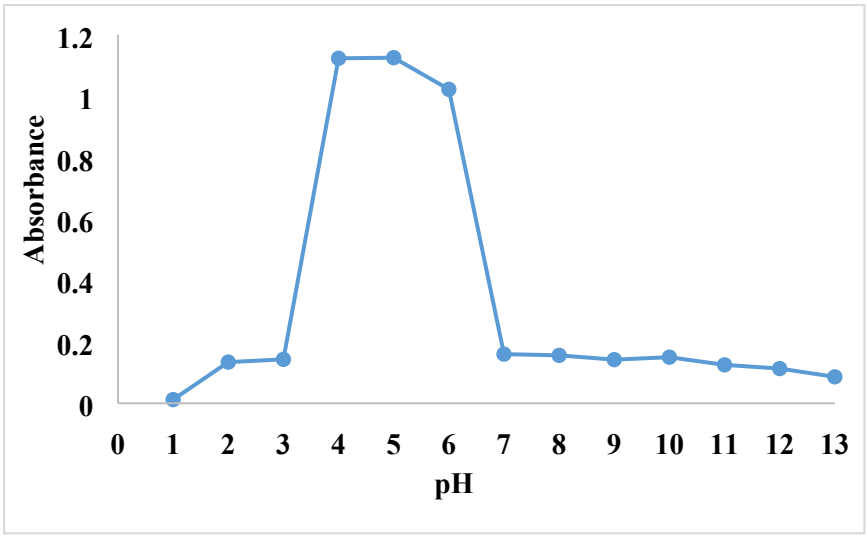

Figure S5 shows the plot of ALP - AgNPs complex at different pH

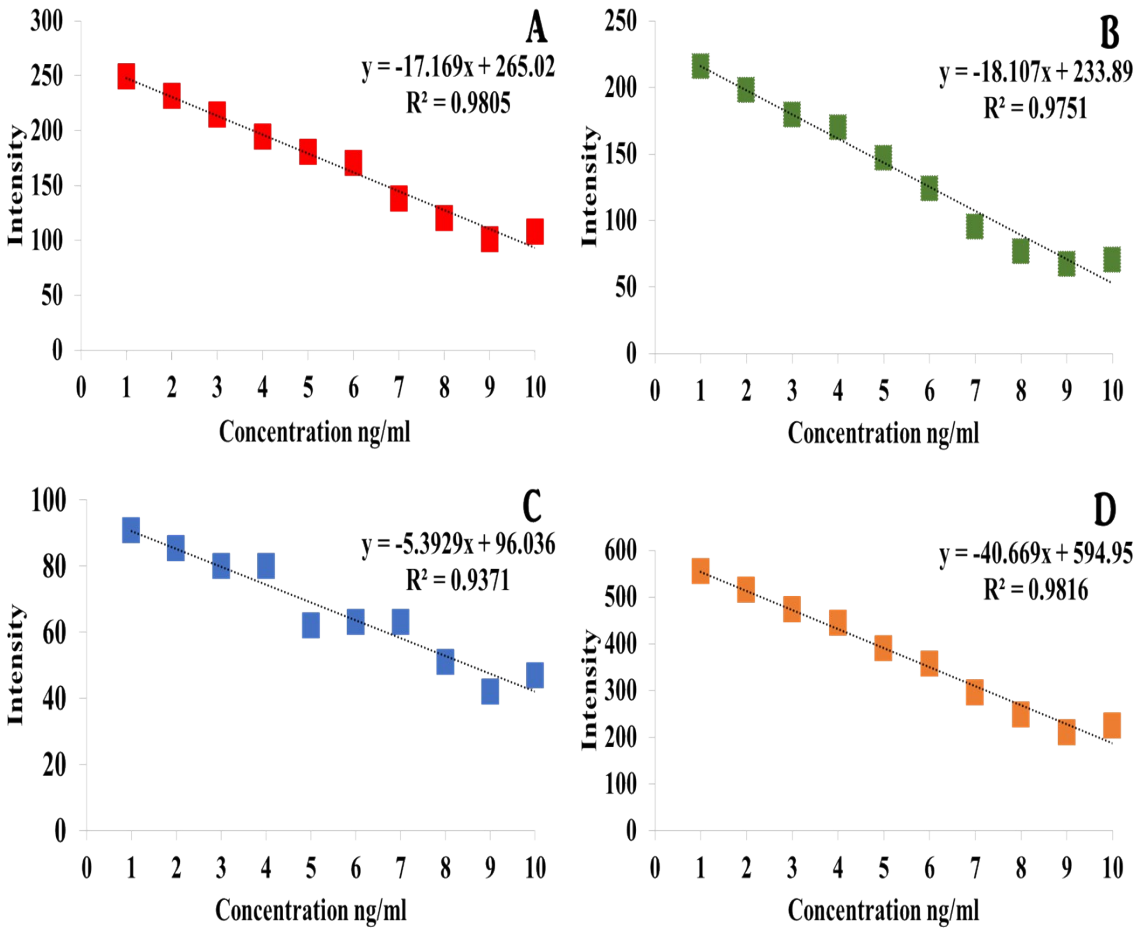

Figure S6 shows Relationship between intensity of (A) red light, (B) green light, (C) blue light, (D) intensity of total RGB and ALP concentration (1-10 ng/ml)

*Table **S**1 Showing limit of detection of the present method*

Method	Linear range (ng/ml)	Regression equation	Correlation coefficient (R^2)	LOD (ng/ml)
UV-Vis Spectrophotometery	1 - 10	y = 0.0097x - 0.0085	0.9881	0.8
Smart phone ananlysis of reaction	1 - 10	y = -40.669x +594.95	0.9816	1
Smart phone ananlysis of µPAD device	10 - 180	y = -0.5746 + 494.87	0.9798	10

Table S2 Comparison with other reported work for detection of ALP

Sr. No.	Method	Detection Limit (ng/ml)	Ref
1.	AuNPs	3.3	[1]
2.	GC and immunoassay	40	[2]
3.	HPLC	150	[3]
4.	HPLC	6.7	[4]
5.	EI-GC-MS	50	[5]
6.	HPLC Photodiode-Array Detection	3	[6]
7.	**Present method**	**0.8**	**--**

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[3] M. N. Uddin, V. F. Samanidou and I.N. Papadoyannis, Stability Study of Six 1,4-Benzodiazepines in Bio-fluids Stored at -20ºC, Chiang Mai J. Sci. 37 (2010) 451-463.

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[6] P. Cabarcos, M.J. Tabernero, I. Álvarez, P. López, P. Fernández, and A.M. Bermejo, Analysis of Six Benzodiazepines in Vitreous Humor by High- Performance Liquid Chromatography–Photodiode-Array Detection, Journal of Analytical Toxicology 34 (2010) 539-542.