Electronic Supplementary Material (ESI) for RSC Advances.

Fabrication of novel quantum dots for the estimation COVID-19 antiviral drug using green chemistry: Application to real human plasma

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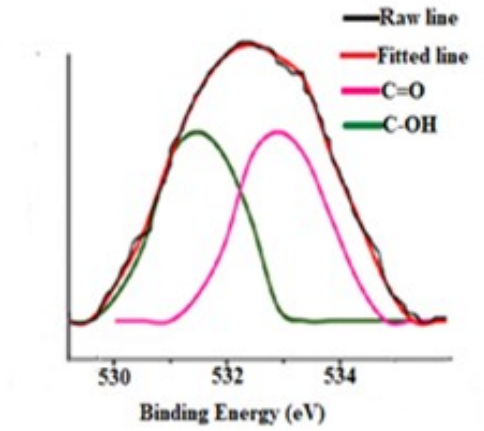

Fig. S1 XPS spectrum for O1s to structure conformation of PA@CQDs

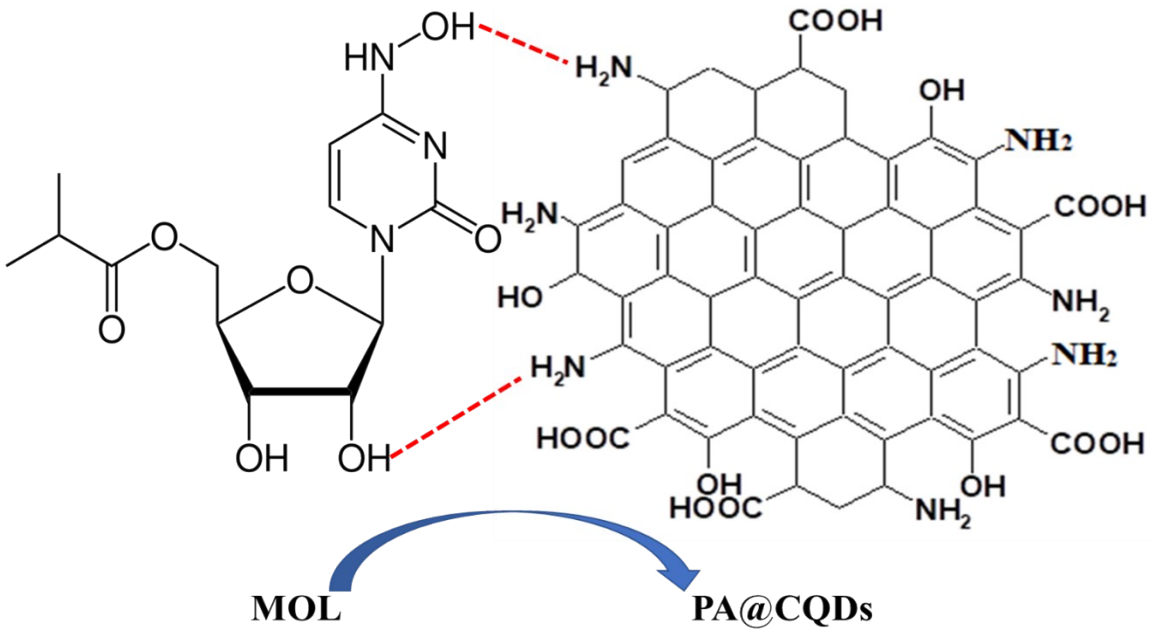

Fig. S2 Suggested reaction mechanism between MOL and PA@CQDs.

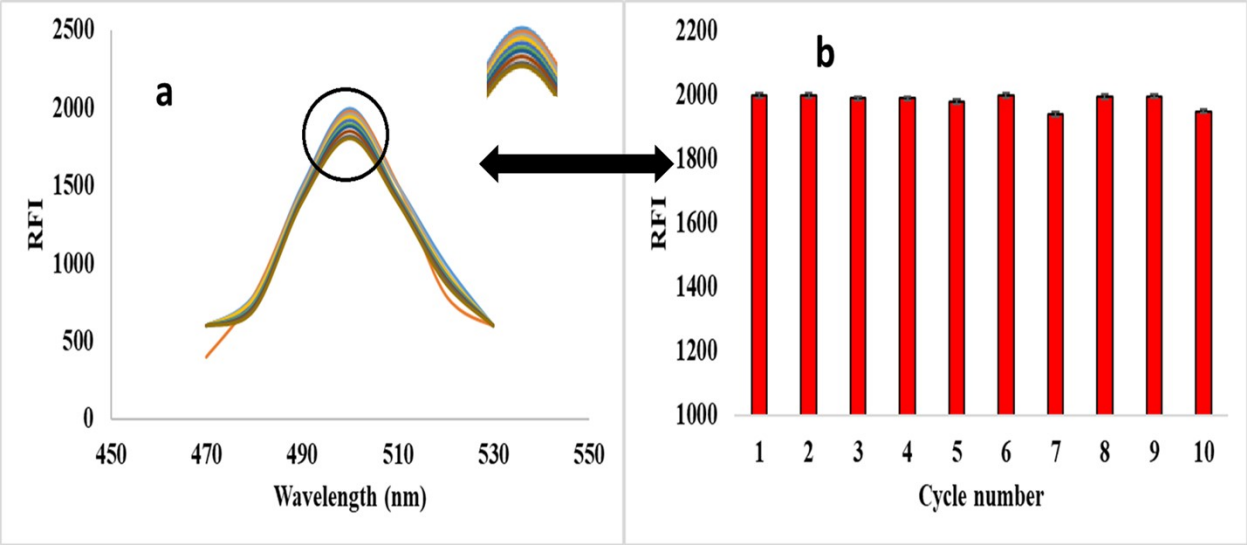

Fig. S3 Reusability of PA@QDs for estimation MOL in different cycles.

Table S1 Accuracy and precision of the proposed method for determination of MOL pure form.

Sample number	Taken (ng mL^{-1})	Found (ng mL^{-1})	% Recovery * ± RSD
1	5.0	5.03	100.60 ± 0.41
2	10.0	10.02	100.20 ± 0.59
3	20.0	19.93	99.65 ± 0.39
4	50.0	50.21	100.42 ± 0.96
5	70.0	70.54	100.77 ± 0.71
Intra-day precision	20	20.10	100.50 ± 0.20
	40	40.02	100.05 ± 0.68
	60	60.32	100. 53 ± 0.33
Inter-day precision	20	19.97	99.85 ± 0.73
	40	39.95	99.87 ± 1.05
	60	60.03	100.05 ± 0.95

***:** Average of three determinations. **RSD**: Relative standard deviation.

Table S2 Accuracy and precision of the proposed method for determining MOL concentration in human plasma.

	Intra-day assay(n=6)			Inter-day assay(n=18)		
Conc. (ng mL^{-1})	**Found (ng mL^{-1})**	**Accuracy (%)**	**Precision (CV %)**	**Found (ng mL^{-1})**	**Accuracy (%)**	**Precision (CV %)**
5	4.80	96.00	1.60	4.75	95.00	1.80
10	9.69	96.90	1.93	9.53	95.30	1.95
50	47.88	95.76	1.32	47.49	94.98	1.50

Table S3 Robustness of the proposed spectrofluorimetric method for the determination of MOL.

Variations	
	% Recovery [a] ± RSD
Optimum condition	101.30 ± 0.44
1- Value of pH (BR buffer)	
6	99.60 ± 1.06
7	99.89 ± 1.11
2- volume of buffer (mL)	
0.75	99.81 ± 0.50
1.25	99.80 ± 0.91
3- PA@CQDs concentration (mg mL^{-1})	
0.14	99.95 ± 0.70
0.16	99.92 ± 0.64
4- Reaction time (min)	
8	99.86 ± 1.50
12	99.97 ± 0.84

[a]: Mean of six determinations.

Table S4 Stability and matrix effect of MOL in human plasma.

Conditions Concentrations	LQC 5 ng mL^{-1}	MQC 10 ng mL^{-1}	HQC 50 ng mL^{-1}
Three Freeze–thaw cycle stability (-24°C)	95.00 ± 1.55	95. 33 ± 1.52	95.16 ± 0.90
Long-term stability (1 months at -24°C)	94.82 ± 0.91	95.52 ± 1.55	96.00 ± 1.43
Short-term stability (12 h at -24°C)	96.00 ± 1.88	97.40 ± 1.11	97.00 ± 0.87
Post-preparative stability (6 h at room temperature 25 °C)	97.13 ± 0.83	98.22 ± 1.13	97.96 ± 0.92
Post-preparative stability (12 h at room temperature 25 °C)	97.78 ± 0.66	97.11 ± 0.52	96.00 ± 1.59

Table S5 Incurred sample reanalysis for estimation of MOL.

Sample	Intial concentration* (ng mL^{-1}) ± SD	Incurred concentration* (ng mL^{-1}) ± SD	% Deviation
1	926.00 ± 1.79	890.55 ± 3.51	- 3.88
2	930.9 ± 2.11	895.44 ± 2.58	- 3.80
3	925.50 ± 1.88	878.20 ± 2.69	- 5.11

*: Mean of three determinations

Table S6. Effect of different excipients for estimation of MOL using the proposed method.

	Recovery* ± RSD
Mannitol (10 mg)	101.11 ± 0.21
Talc (10 mg)	100.22 ± 0.42
Starch (100 mg)	100.06 ± 0.66
Lactose (10 mg)	100.03 ± 0.30
Magnesium stearate (10 mg)	99.20 ± 0.85
Sodium chloride (10 mg)	100.50 ± 0.34

*: Mean of three determinations

Table S7 Application of the spectrofluorimetric method for determination of MOL in spiked human plasma.

Added conc. (ng mL^{-1})	**Found (ng mL^{-1})**	**% Recovery *± RSD**
5	4.89	97.80 ± 0.81
10	9.88	98.80 ± 0.92
20	19.42	97.10 ± 0.84
50	48.08	96.16 ± 1.21
70	68.22	97. 45 ± 1.55

***:** Average of six determinations.