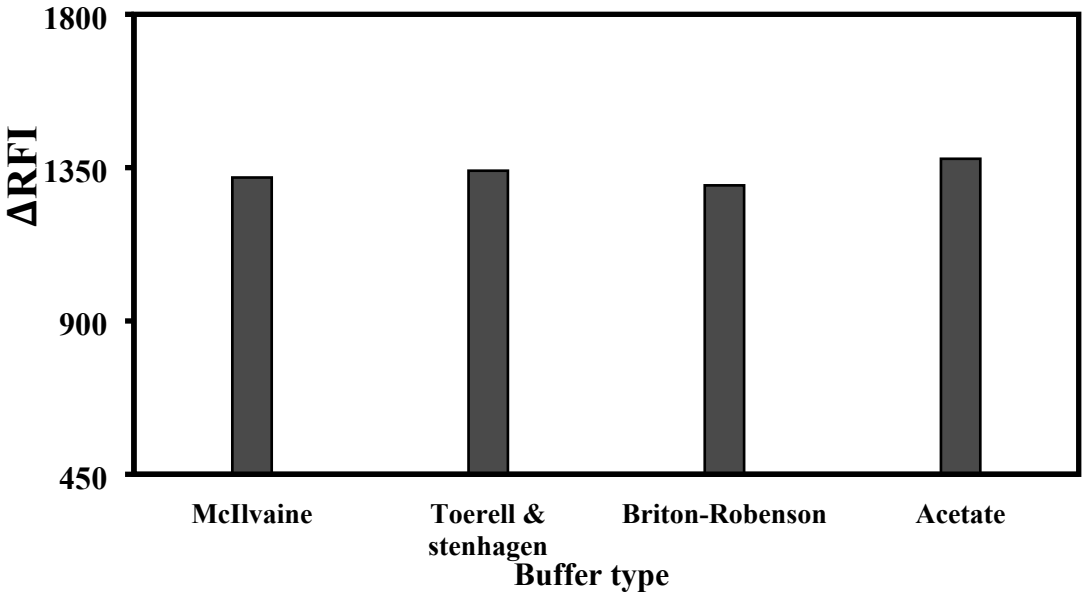
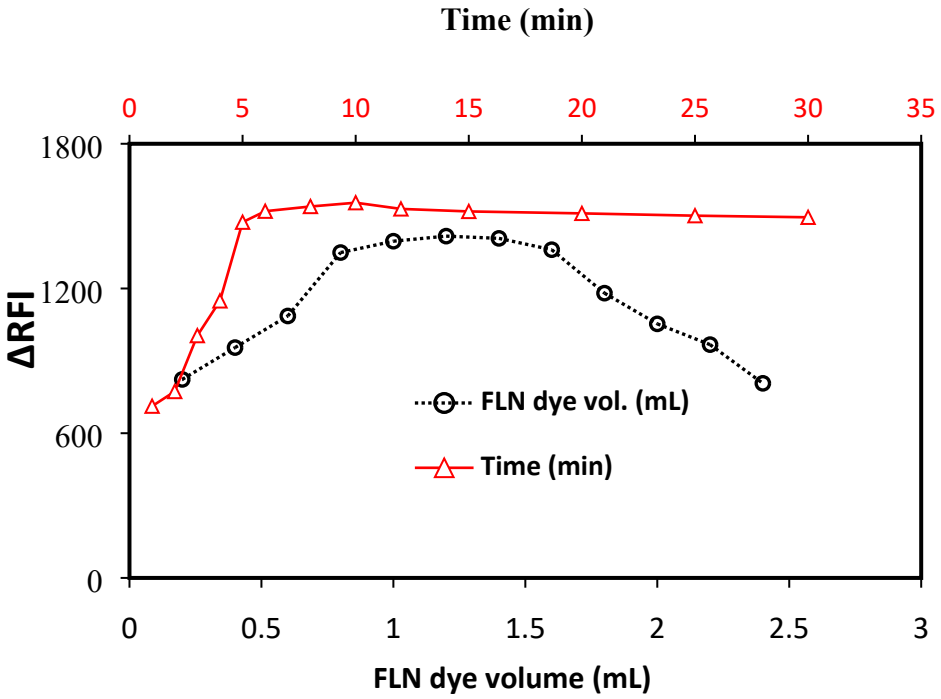
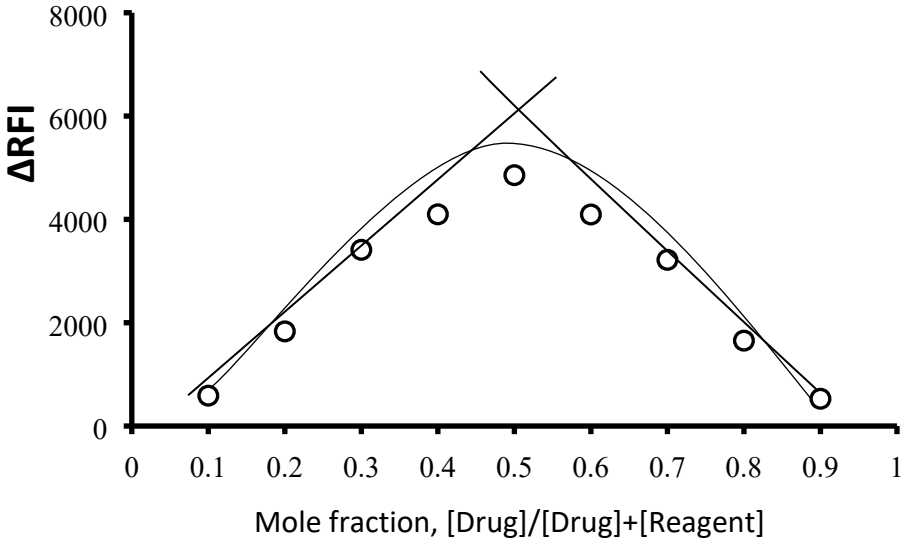
Supplementary data



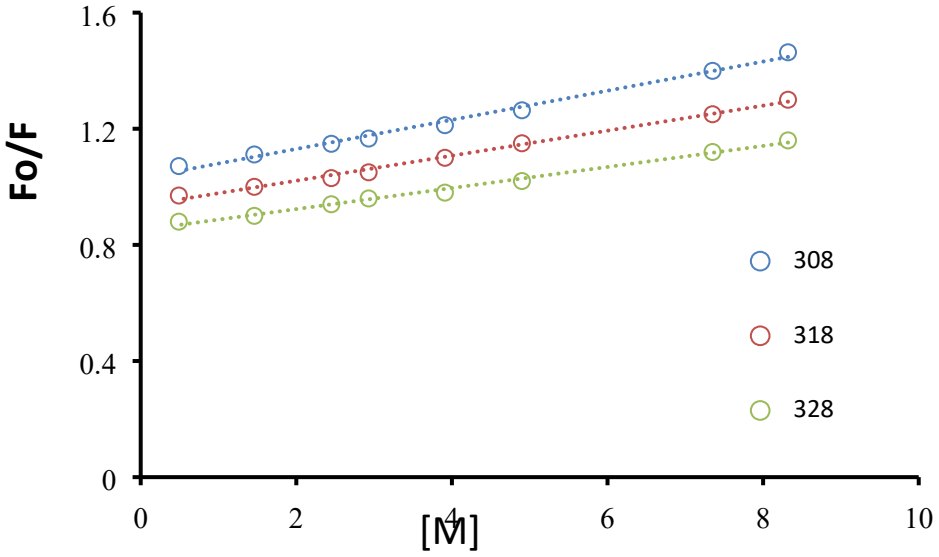
SI figure 1: Effect of pH controlling solution on the fluorescence quenching effect of the association complex formation between LTS and FLN.



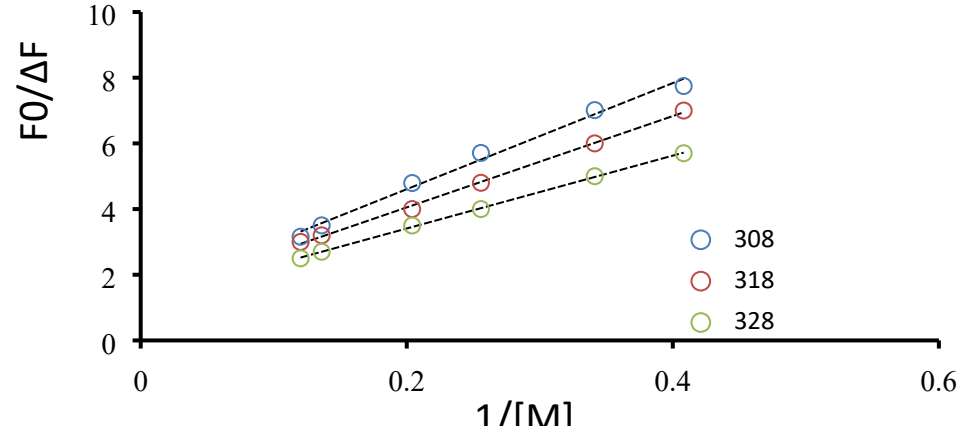
SI figure 2: The FLN dye volume and time impacts on the formed complex.



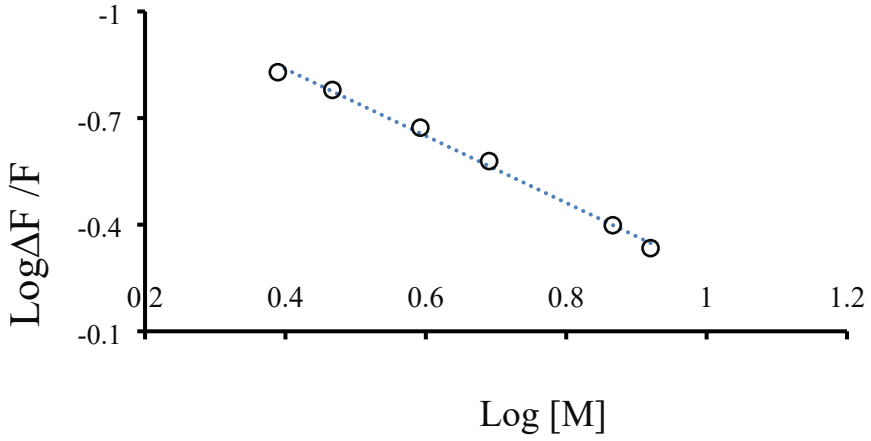
SI figure 3: Job's plot for association complex formation between LTS and FLN using an equimolar concentration of master solutions.



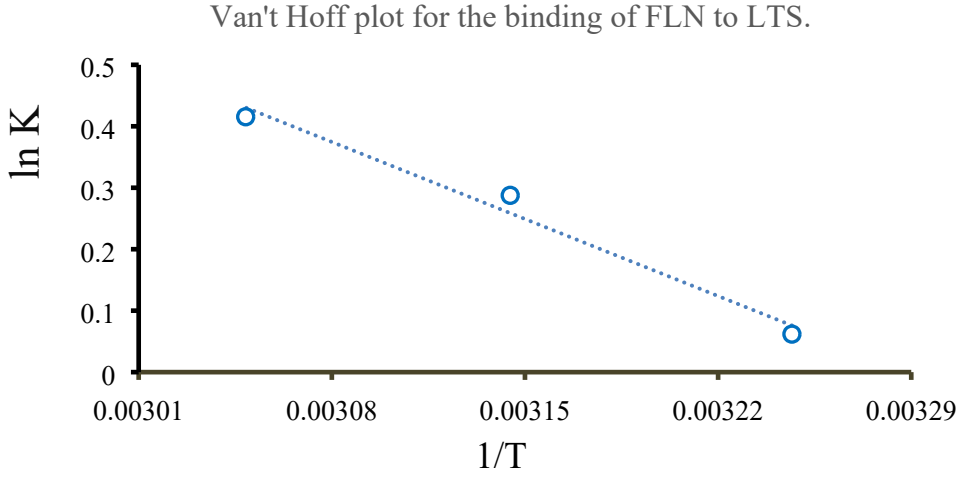
SI figure 4: LTS-induced FLN quenching depicted in the Stern–Volmer graph at three temperature levels.



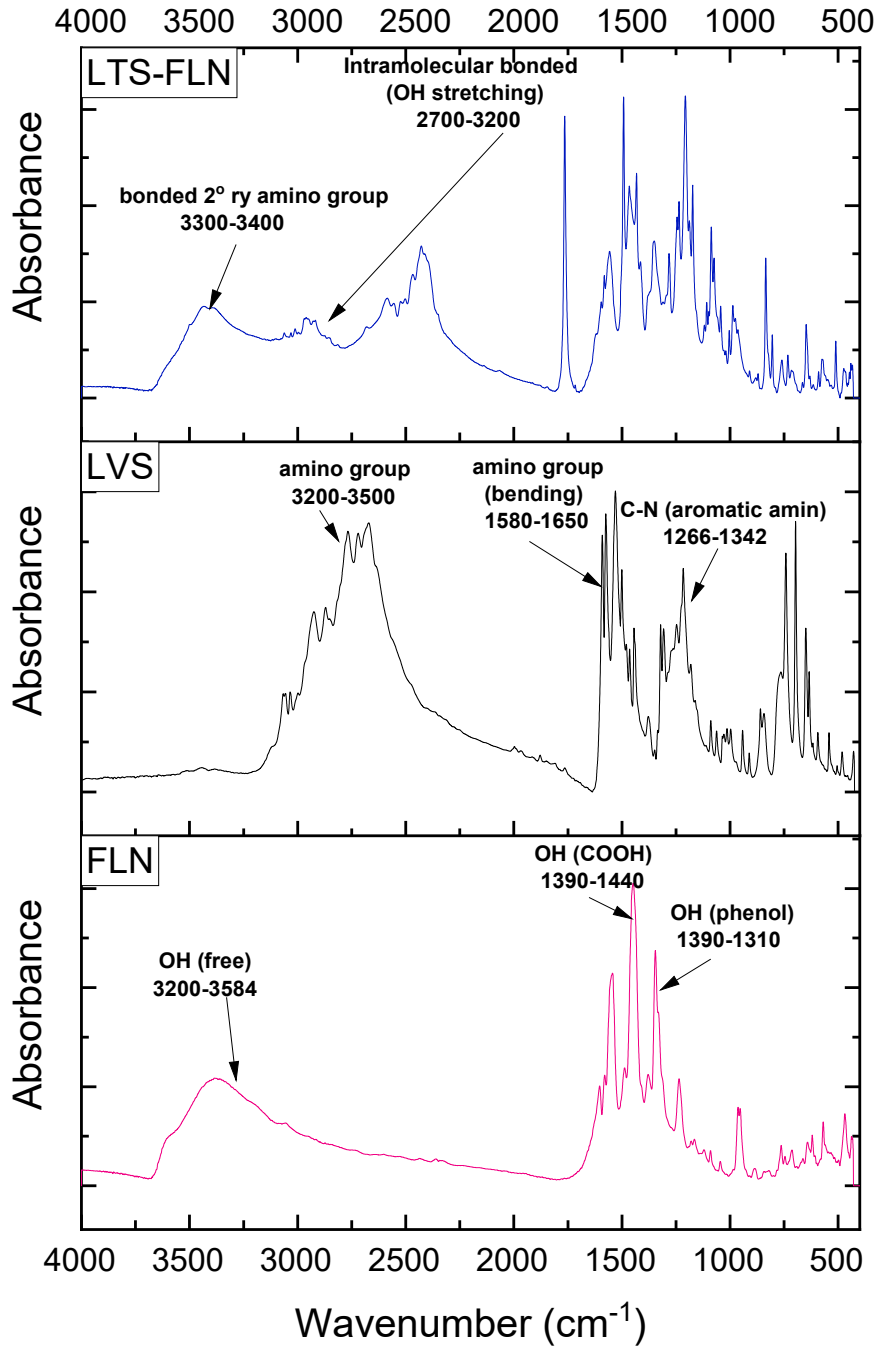
SI figure 5: The Modified Stern–Volmer charting for the LTS and FLN dye binding.



SI figure 6: The graphing of log $(f_0 - f) / f$ to log [M] at operating temperature to determine the binding site(s).



SI figure 7: Van't Hoff charting for the thermodynamic criteria



SI figure 8: FTIR confirmation and characterization of the complex.

SI Table 1: Polarity and dielectric constant scores of the solvents used.

Solvent	Polarity index	Dielectric constant
Water	9.0	80.2
Methanol	6.6	32
Acetone	5.4	20.7
Ethanol	5.2	24.8
Dioxane	4.8	2.2
2-propanol	4.2	19.9

SI Table 2: A comparison of the current method with other reported mrthods and techniques.

Item / Technique	Range*	LOD*	LOQ*	Solvent (If present)	Detection λ (nm.)	Reagent danger	Ref.
HPLC	2-10	0.121	0.369	MoH/ACN	**225**	++	[1]
Electrophoresis	5-200	0.017	0.054	MoH/ACN	**210**	++	[2]
Electroanalysis	0.02-1.2	2.04×10^{-4}	6.0×10^{-4}	H_2SO_4/Eoth	-	++	[3]
Spectrophotometry	6-24	0.145	0.484	DCM	**422**	+++	[4]
Fluorimetry	0.1-1.7	0.02	0.062	water	**554**	-	This work

*Concentration **(µ g/mL)**
MeoH: methanol; Eoth: ethanol; CAN: Acetonitrile; DCM: dichloromethane

SI Table 3: Robustness evaluation of the proposed system

Parameter	Value	Recovery* % ± SD
pH	− 0.2	98.92 ± 0.36
	+ 0.2	100.22 ± 0.45
Buffer volume (mL)	− 0.2	98.54 ± 1.93
	+ 0.2	101.13 ± 1.21
FLN reagent volume (mL)	− 0.2	97.34 ± 2.05
	+ 0.2	99.25 ± 0.74
Time (min)	− 1.0	97.68 ± 2.27
	+ 1.0	101.57 ± 1.69

* The value is the mean of three measurements.

SI Table 4: Effect of common additives on the determination of LTS.

Additive	**Recovery[a] % ± SD[b]**
Lactose monohydrate	98.28 ± 1.93
Polyethylene glycol	98.87 ±1.65
Disodium Edetate	99.76 ± 1.45
Citric Acid Monohydrate	96.76 ± 2.17
Sodium Citrate	99.54 ± 0.62
Maize starch	100.54 ± 1.21
Lactose monohydrate	99.17 ± 1.64

[a]Average of three determinations, [b]SD Standard deviation.

SI Table 5: Selectivity and interference testing

Tested item	Element	Recovery* %	SD
Ion	K^+	98.35	1.87
	Na^+	99.14	1.29
	Ca^{2+}	99.76	1.54
	Zn^2	98.23	2.05
	Mg^{2+}	99.48	2.12
	Ni^{2+}	100.16	0.96
	K^+	100.35	1.67
	CO_3^{2-}	98.68	1.71
	SO_4^{2-}	99.12	1.57
	NO_3^-	98.34	1.51
	HCO_3	97.56	2.51
	I^-	99.45	1.79
	Cl^-	97.68	2.43
Small molecules	Galactose	98.34	1.93
	Glucose	99.32	1.26
	Sucrose	99.37	1.82
	Glucose	100.54	1.28
	Lactose	100.48	1.65

* Average of three determinations

SI Table 6: Application of the proposed system to quantify LTS in vitro

Spiked human plasma		Spiked human urine	
Amount (μg mL^{-1})	**%Recovery* ± SD**	**Amount (**μg mL^{-1}**)**	**%Recovery* ± SD**
0.2	98.21±1.32	0.2	97.81± 0.55
0.5	98.76±0.92	0.5	96.12± 1.18
1.0	98.08±1.88	1.0	98.07±1.13

* Each result is the average of three separate determinations.

SI Table 7: Application of the proposed method for Determination of LTS in Real Human Plasma after a dose of (Katrex, 40 mg/tab)

Parameter [a]	**Value**
$\mathbf{t_{max}}$ (hr.)	1.5
$\mathbf{C_{max}}$ (ng mL^{-1})	1600 (1483)
$\mathbf{t_{1/2}}$ (hr.)	3.3-5.1
Rec* %	92.74 %
SD	1.36

[a]Parameters: t_{max}, time of peak concentration; C_{max}, peak plasma concentration; $t_{1/2}$, terminal elimination half live; Rec%, recovery percent; SD, and RSD%, standard deviation and relative standard deviation respectively.
* mean of three replicates

SI Table 8: The greenness evaluation of the proposed fluorimetric system through the penalty points score.

Item	**Parameter**	**PP score**
Technique	Fluorimetry	0
Reagent	FLN	1
Amount of reagent	< 10 mL	1
Solvent(s)	Water	0
Heating	-	0
Temperature	25 °C	0
Cooling	-	0
pH	3.7	0
Energy (kWh per sample)	1.0 >	0
Waste	1–10 (mL)	3
Occupational hazards		0
(TPPs)		5
Eco-scale total score	= 100 – TPP	95

TPPs is the total penalty points.

References

[1] P. Ravisankar, G.D. Rao, Development and validation of RP-HPLC method for determination of levamisole in bulk and dosage form, Asian J Pharm Clin Res, 6 (2013) 169-173.
[2] L. Xu, F. Luan, F. Hu, H. Liu, Y. Gao, Development and validation of a non-aqueous capillary electrophoresis method for simultaneous estimation of mebendazole and levamisole hydrochloride in compound mebendazole tablets, Analytical Methods, 5 (2013) 762-766.
[3] B.C. Lourencao, R.A. Medeiros, S.S. Thomasi, A.G. Ferreira, R.C. Rocha-Filho, O. Fatibello-Filho, Amperometric flow-injection determination of the anthelmintic drugs ivermectin and levamisole using electrochemically pretreated boron-doped diamond electrodes, Sensors and Actuators B: Chemical, 222 (2016) 181-189.
[4] A.M. El-Didamony, Spectrophotometric determination of benzydamine HCl, levamisole HCl and mebeverine HCl through ion-pair complex formation with methyl orange, Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy, 69 (2008) 770-775.