**Supplementary material**

**Effect of temperature and salt/alcohol on the interaction of tetradecyltrimethylammonium bromide/** **Triton X-100 with moxifloxacin hydrochloride: A multitechnique approach**

Shahina Aktara, Mohammad Robel Mollaa, Shamim Mahbuba, Malik Abdul Rubb, Md. Anamul Hoquea,\* D.M. Shafiqul Islama,\*

a*Department of Chemistry, Jahangirnagar University, Savar, Dhaka- 1342, Bangladesh*

*bDepartment of Chemistry, Faculty of Science, King Abdulaziz University, Jeddah-21589, Saudi Arabia*





**Fig. S1.** Plots of (a) *cmc*1 versus *T* and (b) *cmc*2 versus *T* for pure TTAB in water.



**Fig. S2.** Enthalpy-entropy compensation plot for the (TTAB) in aqueous solution.

**Fig. S3**. ln(*X*MFH) versus *T*CP Plot for (MFH+ TX-100) system containing 92.79×10-3 mol Kg-1 TX-100 in aqueous medium to calculate Δ*H*0CP.



**Fig. S4**. The Benesi-Hildebrand plot for (MFH+ TX-100) system water at 293.15K.

**Table TS1.** Transfer of thermodynamic parameters of micellization of MFH aqueous solution of salt and ethanol.

Medium *Isalt T* *ΔG01,m,tr ΔG02,m,tr  ΔH01,m,tr ΔH02,m,tr ΔC01,m,tr ΔC02,m,tr*

(mmolKg-1) (K) (kJ mol-1) (kJ mol-1) (kJ mol-1) (kJ mol-1) (kJ K-1 mol-1) (kJ K-1 mol-1)

(**TTAB)**

(NaCl+H2O) 1.5 303.15 -12.47 - -19.15 - -10.01 -

308.15 -12.4 - -6.86 - -1.30 -

313.15 -11.92 - -3.90 - 1.43 -

318.15 -11.69 - -3.82 - -2.61 -

323.15 -10.69 - -42.45 - -14.26 -

**(MFH + TTAB)**

303.15 16.59 -7.83 29.91 10.15 -4.56 1.11

308.15 17.25 -7.84 15.59 11.92 -1.43 -0.25

H2O 0 313.15 17.91 -7.62 13.41 7.55 0.39 -1.59

318.15 18.43 -7.83 16.46 -3.44 0.61 -2.93

323.15 19.49 -8.23 16.57 -21.94 -0.99 -4.28

**(MFH + TTAB)**

(NaCl+H2O) 1.5 303.15 0.86 -41.7 -17.28 21.26 7.22 -1.35

308.15 0.73 -42.7 -0.06 4.83 0.40 -4.55

313.15 3.39 -42.55 -4.35 -17.02 -1.09 -3.42

318.15 1.97 -42.64 0.66 -21.34 4.42 2.55

323.15 4.66 -42.85 54.15 17.33 18.65 13.89

**(MFH + TTAB)**

(EtOH+H2O) 0 303.15 -9.35 - -56.89 - 10.22 -

308.15 -8.72 - -13.71 - 6.76 -

313.15 -8.38 - 7.69 - 1.48 -

318.15 -7.36 - -2.68 - -5.98 -

323.15 -6.46 - -77.24 - -15.81 -

**Table TS2.** Enthalpy-entropy compensation parameters for MFH-TTAB system containing 3 mmolkg-1 in water and in aqueous salt solution.

System Medium *I* Δ*H* 0,\*1,m Δ*H0,*\* 2,m  *T*c,1 *T*c,2 *R*12 *R*22

(mmolkg-1) (kJmol-1) (*K*)

TTAB H2O 0 -30.28 - 301.26 - 0.97 -

TTAB H2O-NaCl 1.5 -34.24 - 239.68 - 0.99 -

MFH+TTAB H2O 0 -11.38 -8.24 284.55 317.19 1.00 1.00

MFH+TTAB H2O-NaCl 1.5 -17.03 -40.91 316.58 303.31 0.79 0.99

MFH+TTAB H2O-EtOH 0 -38.88 - 307.41 - 1.00 -