

Supporting information

A dual-functional sulfone biscompound containing 1,2,3-triazole moiety for decolorization and disinfection of contaminated water

Emad K. Radwan ^{a*}, Huda R. M. Rashdan ^b, Bahaa A. Hemdan ^a, Asmaa A. Koryam ^a, and Mehrez E. El-Naggar ^{c*}

^a Water Pollution Research Department, National Research Centre, 33 El Buhouth St, Dokki, 12622 Giza, Egypt.

^b Chemistry of Natural and Microbial Products Department, Pharmaceutical and Drug Industries Research Institute, National Research Centre, 33 El Buhouth St, Dokki, 12622 Giza, Egypt.

^c Institute of Textile Research and Technology, National Research Centre, 33 El Bohouth St, Dokki, Giza, 12622, Egypt.

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* Corresponding authors. E-mail addresses: emadk80@gmail.com (Emad K. Radwan) and mehrez_chem@yahoo.com (Mehrez E. El-Naggar).

Adsorption kinetics models.

Pseudo-first-order

$$q_t = q_e (1 - e^{-k_1 t}) \quad (S1)$$

Pseudo-second-order

$$q_t = \frac{k_2 q_e^2 t}{1 + k_2 q_e t} \quad (S2)$$

where k_1 (1/min) is the PFO rate constant, k_2 (g/mg.min) is the PSO rate constant, respectively, and t (min.) is the contact time.

Adsorption isotherm models.

Freundlich

$$q_e = K_f C_e^{1/n} \quad (S3)$$

Langmuir

$$q_e = \frac{q_L K_L C_e}{1 + K_L C_e} \quad (S4)$$

Dubinin–Radushkevich

$$q_e = q_{D-R} e^{\left[-\beta \left(RT \ln \left(1 + \frac{1}{C_e} \right) \right) \right]} \quad (S5)$$

Temkin

$$q_e = \left(\frac{RT}{b_T} \right) \ln A_T C_e \quad (S6)$$

Redlich–Peterson

$$q_e = \frac{K_{R-P} C_e}{1 + a_{R-P} C_e^g} \quad (S7)$$

where K_F ($\text{mg}^{(1-1/n)}\text{L}^{(1/n)}/\text{g}$) and n (–) are Freundlich constants; q_L (mg/g) is the Langmuir monolayer saturation capacity, and K_L (L/mg) is the Langmuir equilibrium constant; q_{D-R} (mg/g) is the D–R maximum adsorption capacity, β ($\text{kJ/mol}^2/\text{J}^2$) is a D–R constant, R is the ideal gas constant (kJ/mol.K), and T (K) is the thermodynamic temperature; b_T (kJ/mol) and A_T (L/g) are Temkin constants related to the adsorption heat, and equilibrium binding, respectively; K_{R-P} (L/mg) and a_{R-P} (L/mg) are R–P constants related to the adsorption capacity, and the affinity of the binding sites, respectively, and g (–) is an exponent related to the adsorption intensity.

Error functions.

Coefficient of determination

$$R^2 = \frac{\sum (q_{e,cal} - \bar{q}_{e,exp})^2}{\sum (q_{e,cal} - \bar{q}_{e,exp})^2 - \sum (q_{e,cal} - q_{e,exp})^2} \quad (S8)$$

Chi-square

$$\chi^2 = \sum_{i=1}^N \left[\frac{(q_{e,exp} - q_{e,cal})^2}{q_{e,cal}} \right] \quad (S9)$$

**Root-mean-square
error**

$$RMSE = \sqrt{\frac{1}{N-M} \sum_{i=1}^N (q_{e,measured} - q_{e,model})^2} \quad (S10)$$

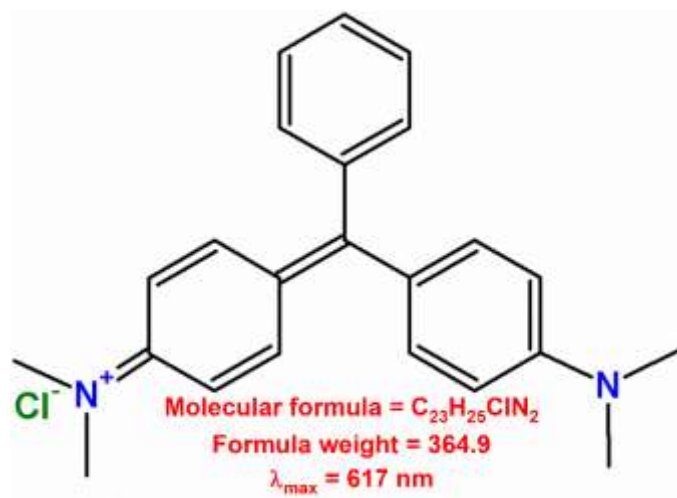


Figure S1. Structure and some properties of MG dye.

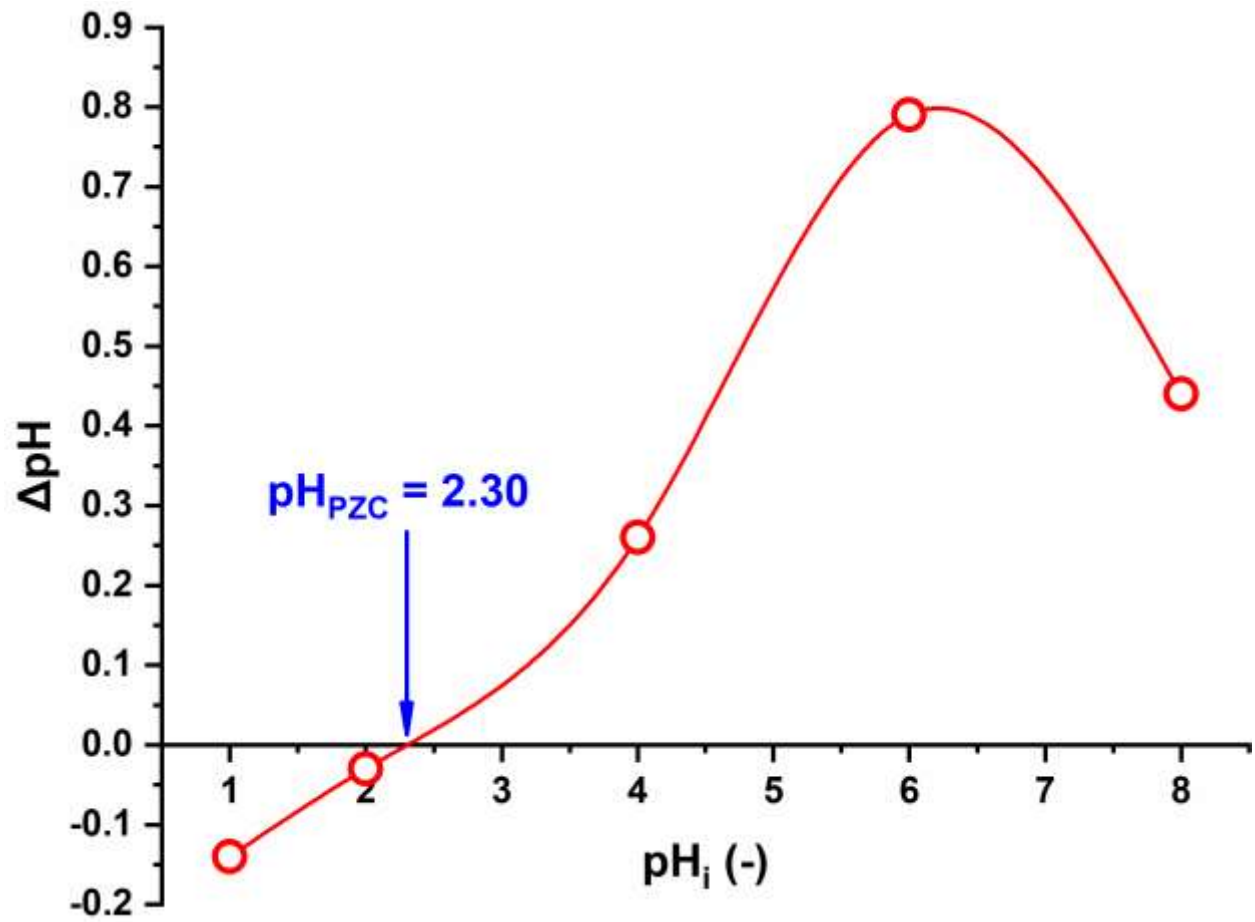


Figure S2. pH_{PZC} of SBPTE.

Table S1. First order rate constants for the inactivation of some waterborne pathogenic bacterial
by SBPTE.

	k (min⁻¹)	R²
<i>E. coli</i>	-0.027	0.983
<i>S. enterica</i>	-0.026	0.992
<i>P. aeruginosa</i>	-0.025	0.997
<i>S. aureus</i>	-0.013	0.934
<i>L. monocytogenes</i>	-0.017	0.991
<i>E. faecalis</i>	-0.016	0.990