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Supplementary material

Research Paper

Photodegradation of three benzotriazoles induced by four Fe^{III}-carboxylate complexes in water under ultraviolet irradiation

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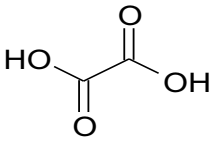
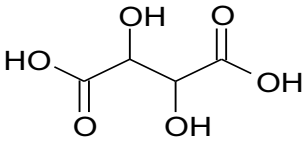
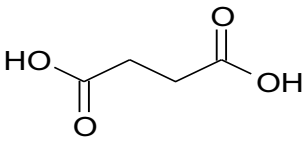
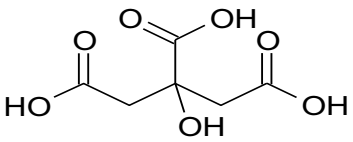
Table S1. Basic chemical information of four carboxylic acids

Carboxylic acids	CAS number	Molecular formula	Molecular weight	Structure
Oxalic acid	144-62-7	$C_2H_4O_4$	90.03	
Tartaric acid	526-83-0	$C_4H_6O_6$	150.09	
Succinic acid	110-15-6	$C_4H_6O_4$	118.09	
Citric acid	77-92-9	$C_6H_8O_7$	192.12	

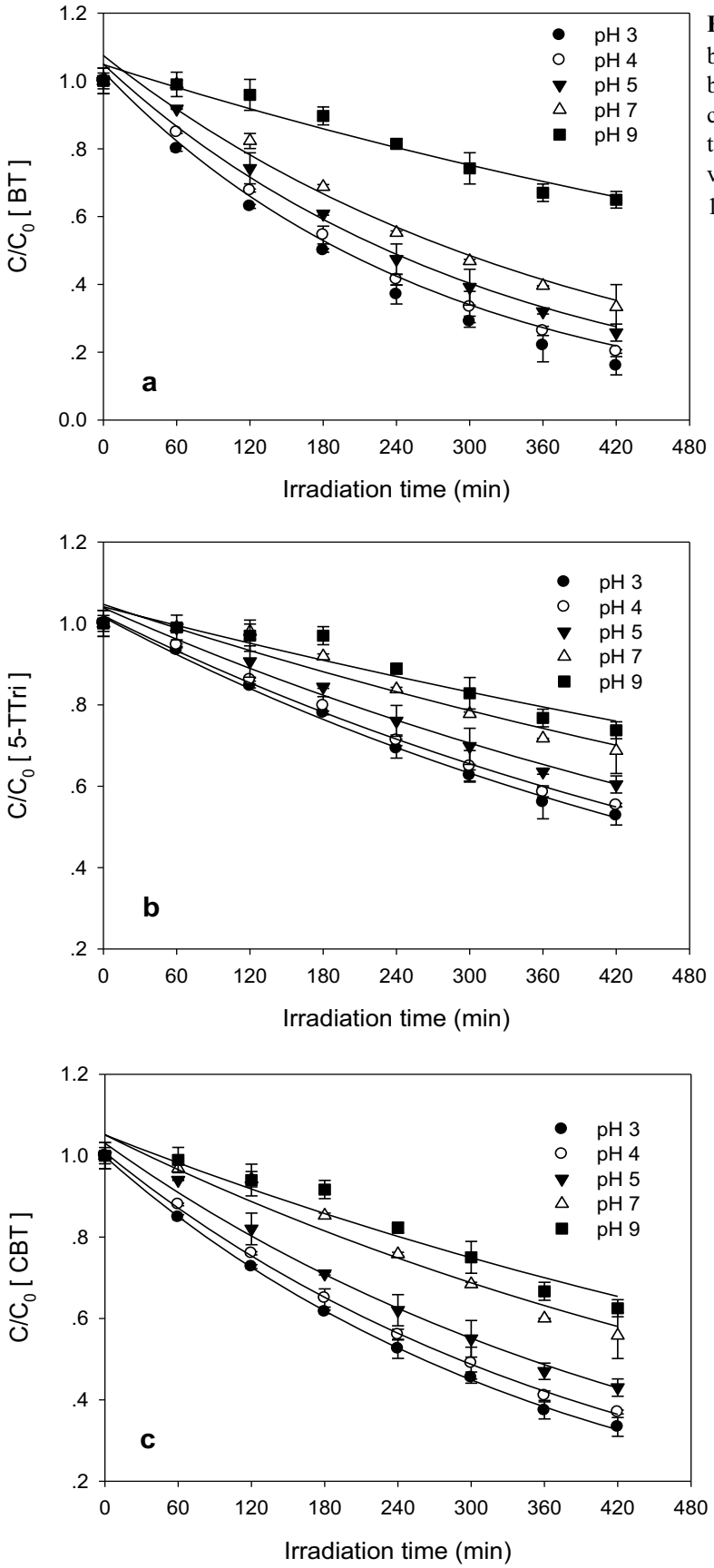
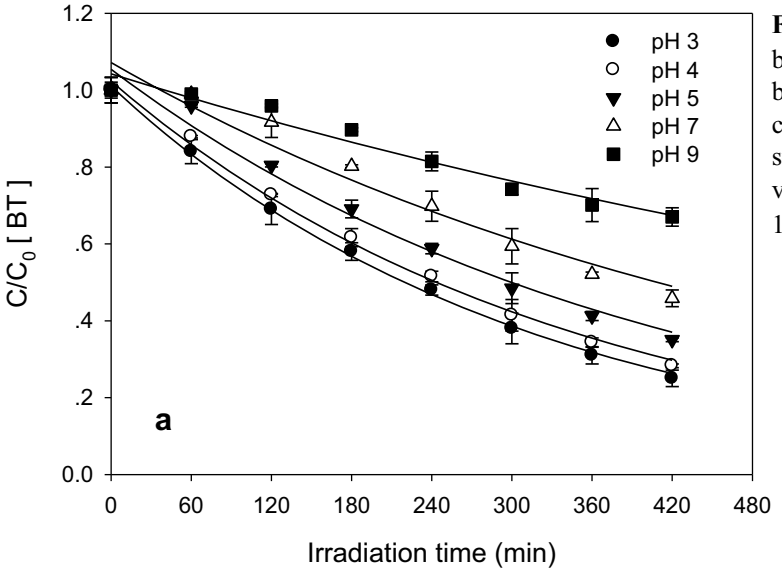
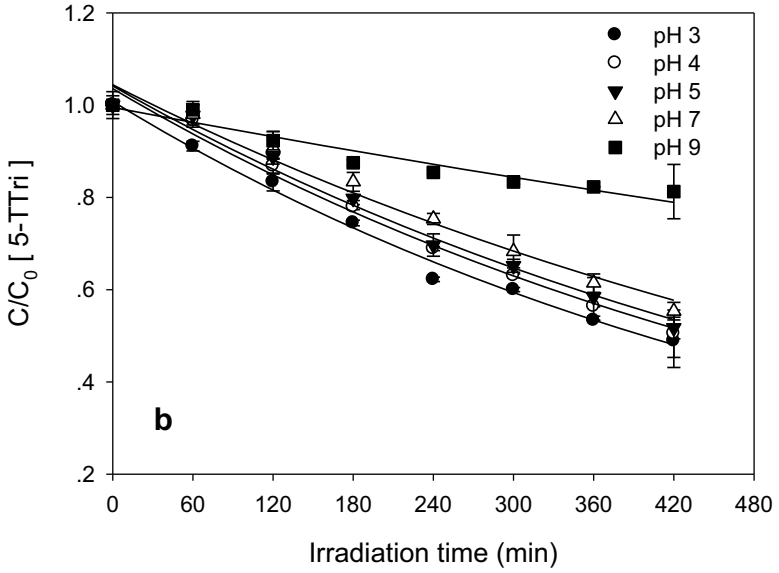


Fig. S1. Photodegradation of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) in Fe^{III}-tartrate complex system at different pH values. $[BTs]_0$ = 1 mg L^{-1}, $[Fe^{3+}]_0$ = 10 μmol L^{-1}, $[tartrate]_0$ = 100 μmol L^{-1}.





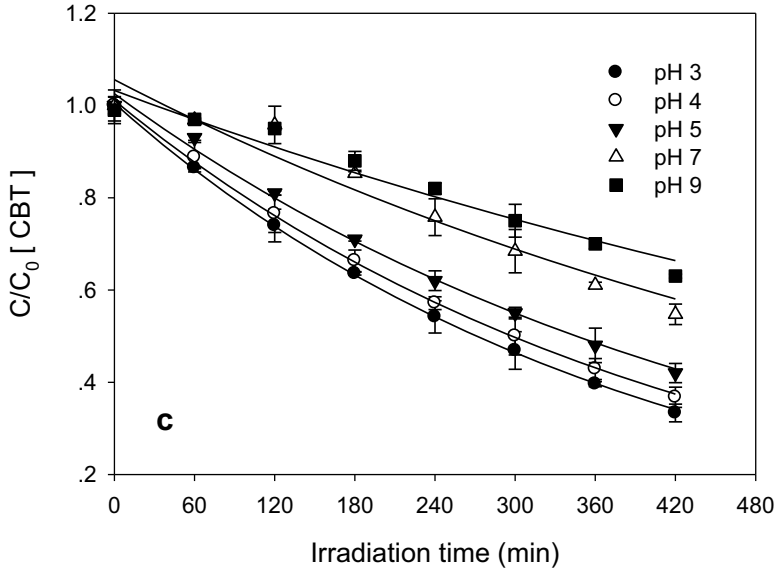
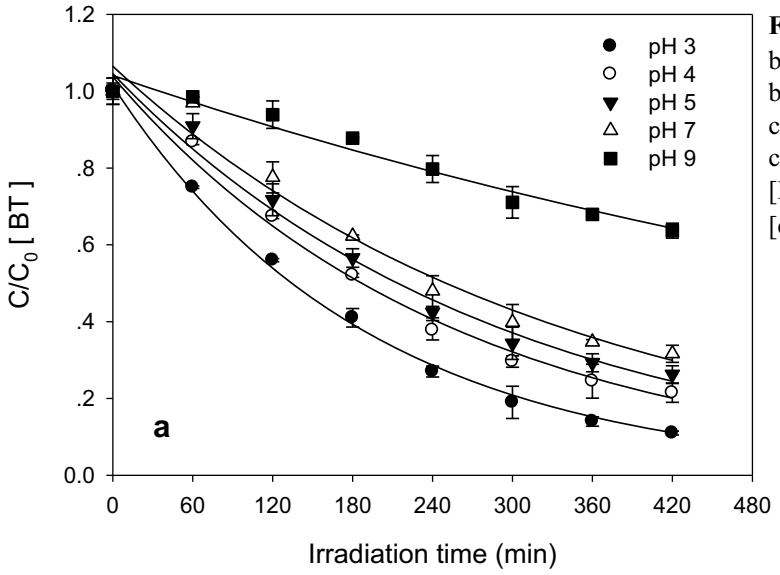
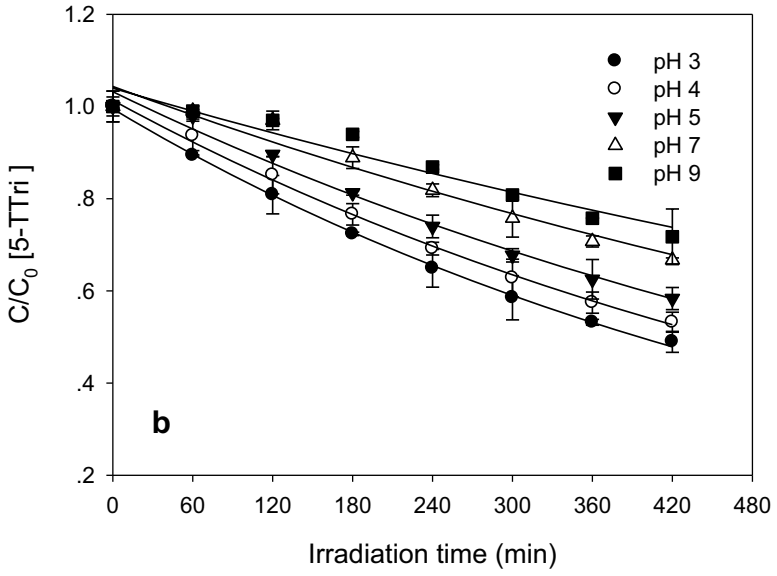


Fig. S2. Photodegradation of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) in Fe^{III}-succinate complex system at different pH values. $[BTs]_0$ = 1 mg L^{-1}, $[Fe^{3+}]_0$ = 10 μmol L^{-1}, $[succinate]_0$ = 100 μmol L^{-1}.





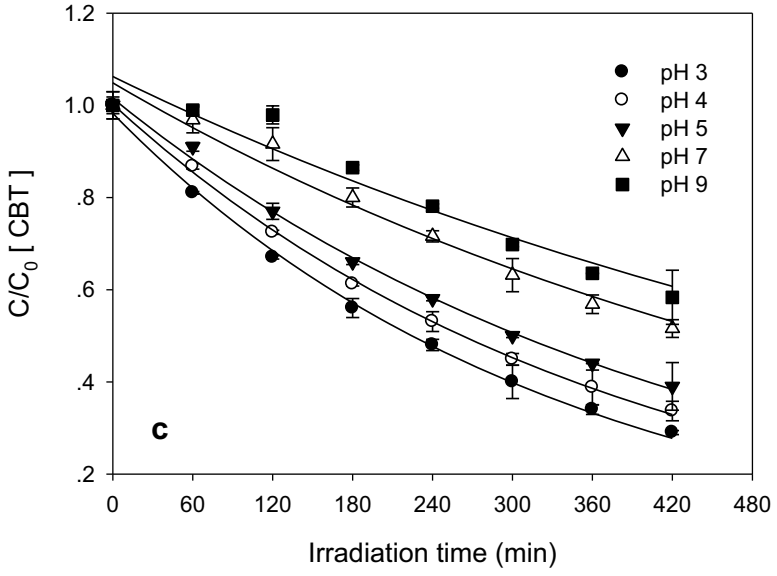


Fig. S3. Photodegradation of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) in Fe^{III}-citrate complex system at different pH values. $[BTs]_0$ = 1 mg L^{-1}, $[Fe^{3+}]_0$ = 10 µmol L^{-1}, $[citrate]_0$ = 100 µmol L^{-1}.

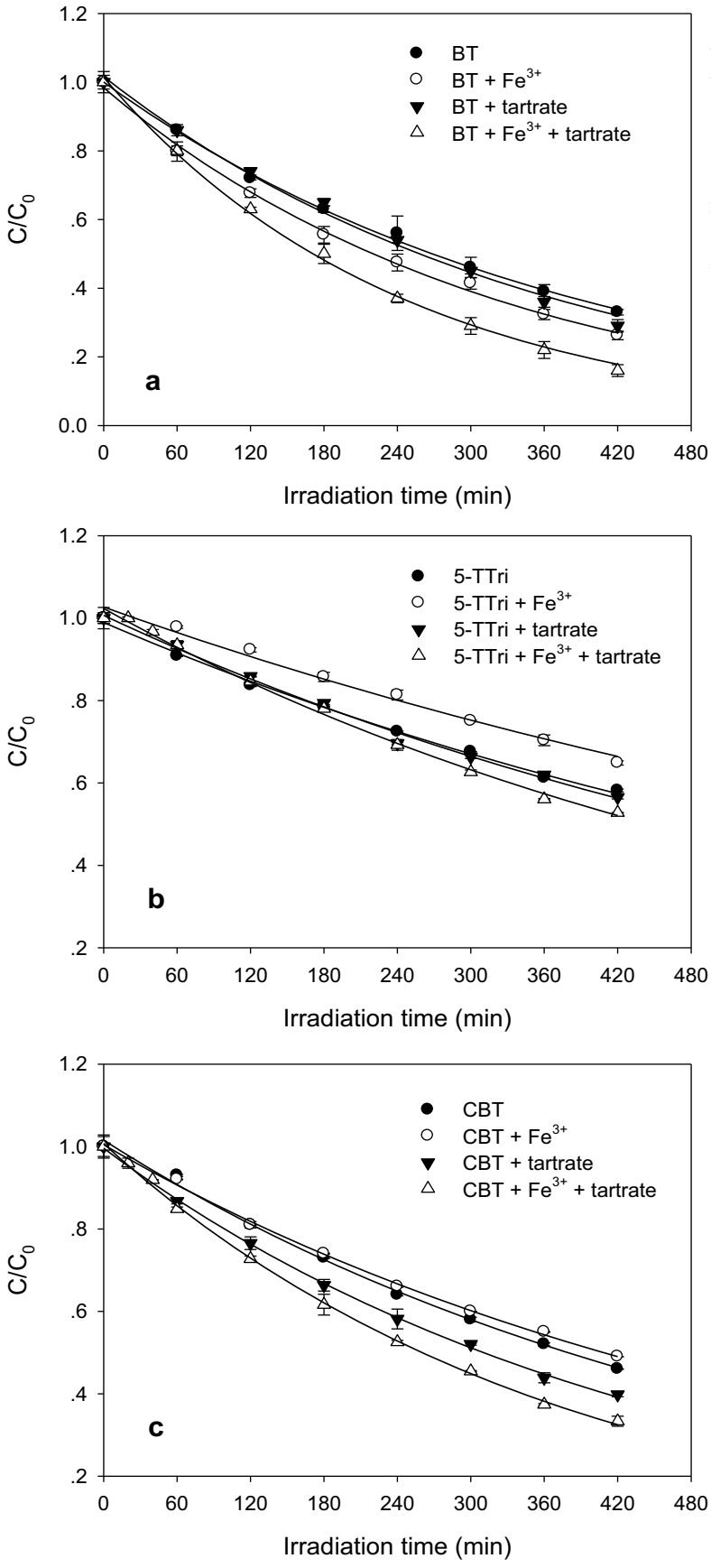


Fig. S4. Photodegradation of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) in aqueous solutions in the presence of Fe^{3+} or tartrate, and the combinations of Fe^{3+} and tartrate respectively. $[BTs]_0$ = 1 mg L^{-1}, $[Fe^{3+}]_0$ = 10 μmol L^{-1}, $[tartrate]_0$ = 100 μmol L^{-1}, pH = 3.00 ± 0.05.

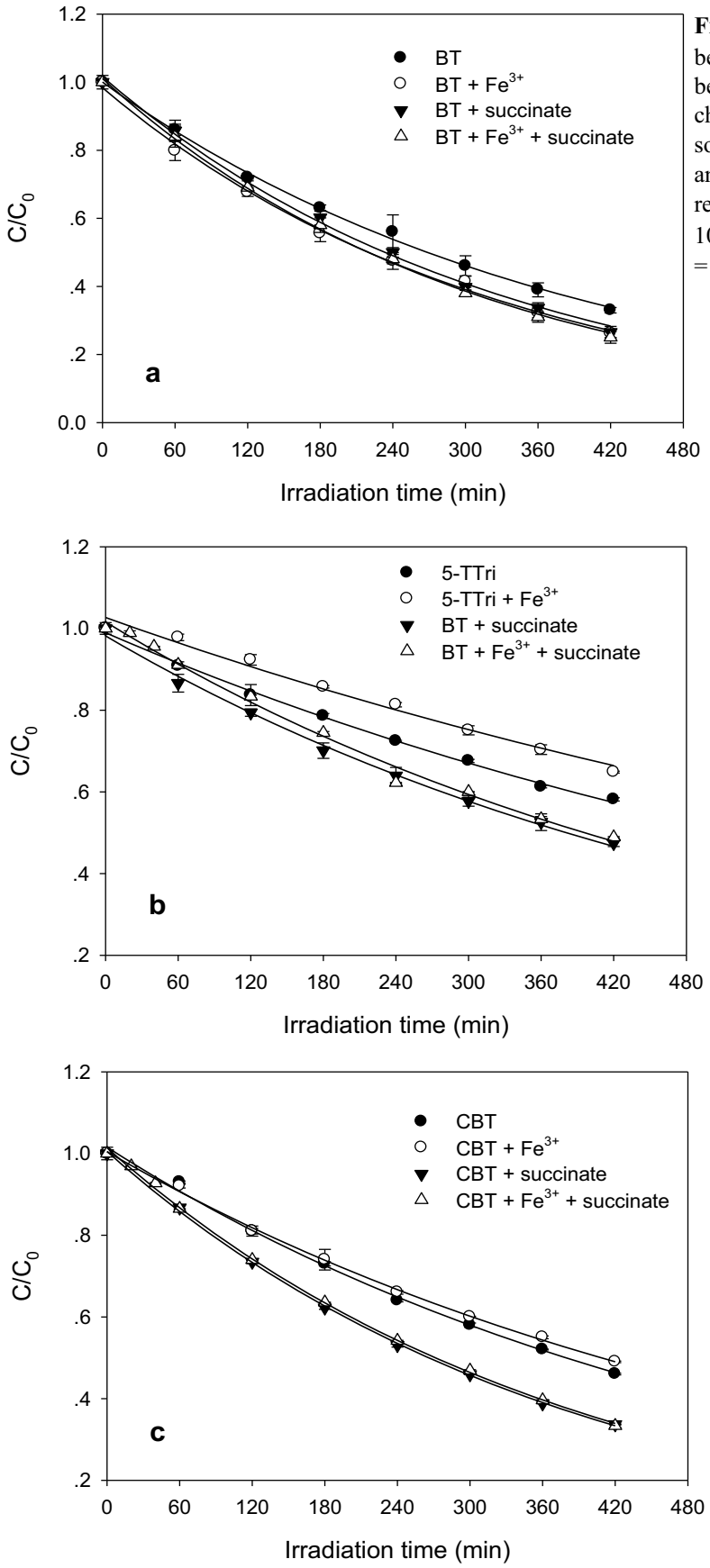
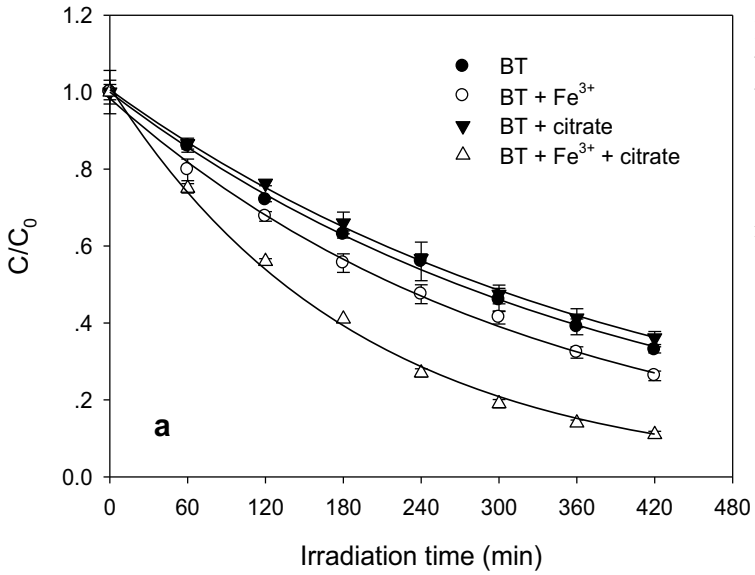
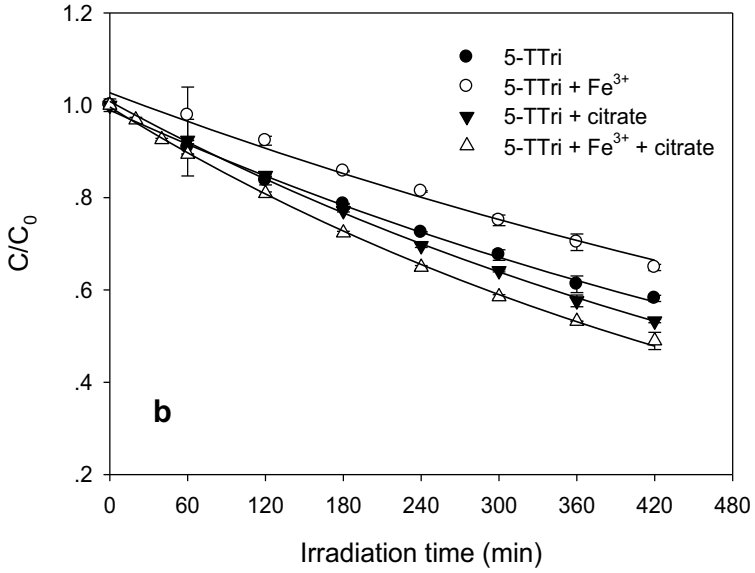


Fig. S5. Photodegradation of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) in aqueous solutions in the presence of Fe^{3+} or succinate, and the combinations of Fe^{3+} and succinate respectively. $[BTs]_0$ = 1 mg L^{-1}, $[Fe^{3+}]_0$ = 10 µmol L^{-1}, $[succinate]_0$ = 100 µmol L^{-1}, pH = 3.00 ± 0.05.





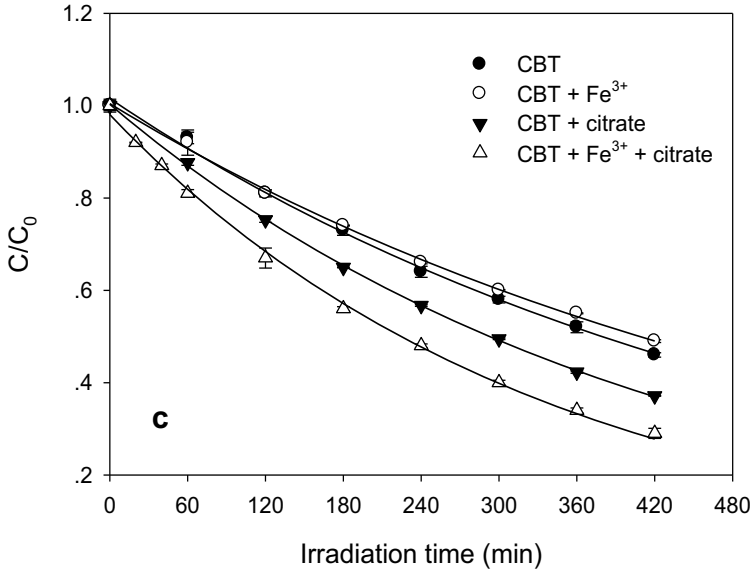


Fig. S6. Photodegradation of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) in aqueous solutions in the presence of Fe^{3+} or citrate, and the combinations of Fe^{3+} and citrate respectively. $[BTs]_0$ = 1 mg L^{-1}, $[Fe^{3+}]_0$ = 10 μmol L^{-1}, $[citrate]_0$ = 100 μmol L^{-1}, pH = 3.00 ± 0.05.

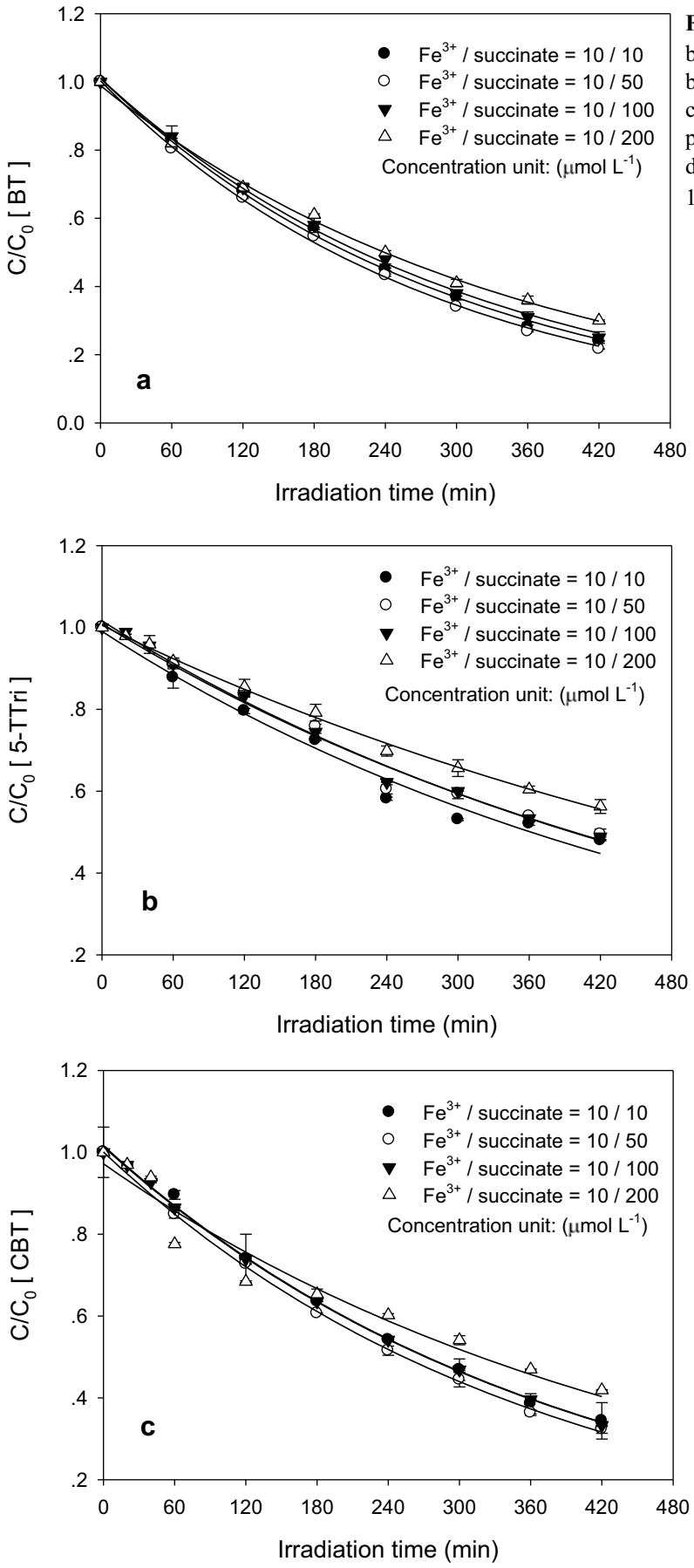


Fig. S7. Concentration changes of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) during the photooxidation in aqueous solutions with different Fe^{3+}/succinate ratios. $[BTs]_0$ = 1 mg L^{-1}, pH = 3.00 ± 0.05.

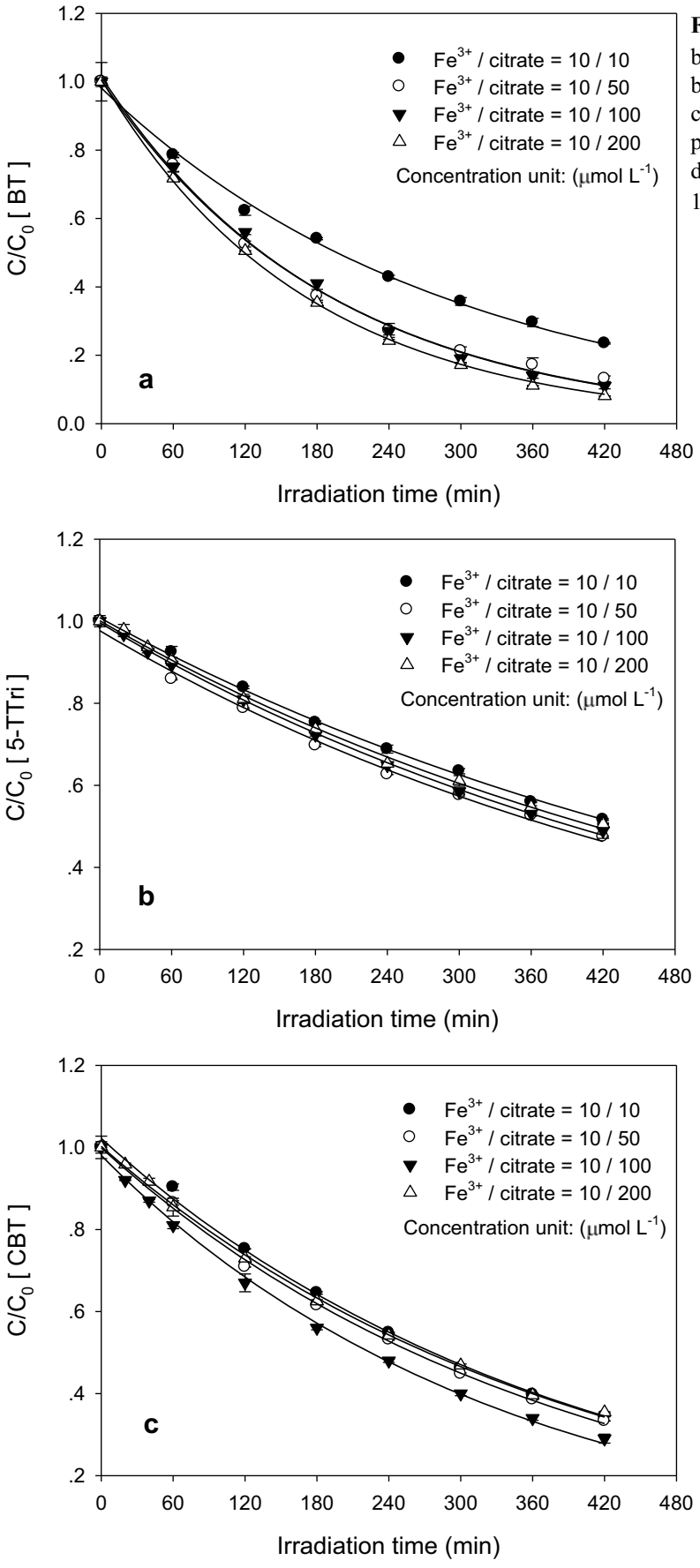


Fig. S8. Concentration changes of (a) benzotriazole (BT), (b) 5-methyl-benzotriazole (5-TTri) and (c) 5-chlorobenzotriazole (CBT) during the photooxidation in aqueous solutions with different Fe^{3+}/citrate ratios. $[BTs]_0$ = 1 mg L^{-1}, pH = 3.00 ± 0.05.