ESI

Peroxydusulfate activation by $[Ru^{II}(tpy)(pic)(H_2O)]^+$. Kinetic, mechanistic and anti-microbial activity studies†

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S1 Minimal inhibitory concentration (MIC) determination by broth dilution method

The bacterial strain used in this study is *Escherichia coli* DH5α. Strains were maintained on Luria-Bertani (LB) broth (Himedia).The cells were grown in the 50 ml of sterile LB broth medium until reaching log phase (around 0.6 OD at 600nm). Antimicrobial activity of Ru-complex in the absence and the presence of peroxydisulfate were investigated. Each experiment was executed in triplicates. By using the micro-pipette, the Ru-compound added in increasing concentrations from 0.005 mM to 0.025 mM as mentioned in the table. Peroxydisulfate concentration ranges from 0.05 mM to 0.25 mM. The final volume of each tube was made up to 10 ml by the addition of required amount of sterile LB broth/ water. Into each tube, 10µl of *E. coli* culture inoculated aseptically, and blank maintained without adding the inoculum. The solution mixed up thoroughly by gentle swirling 6-8 times. The same steps were carried for three sets with appropriate blank and the tubes were incubated at 37°C at 120 rpm for 12 hours. After incubation, optical density at 600 nm over the corresponding blank, were noted to determine the number of cells in each tube.[1] The average values of the absorbance by *Escherichia coli* DH5α at 600 nm were considered for plotting the graph by *Graph pad prism software*.

References

1. Andrews, J.M., 2001.Determination of minimum inhibitory concentrations. J Antimicrob. Chemother 48 Suppl 1, 5-16.

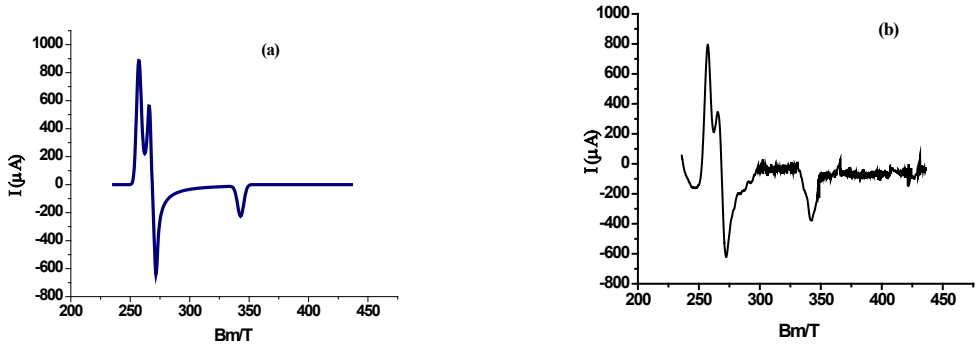

Figure S1 EPR spectrum of the $[Ru^{III}(tpy)(pic(OH)]^+$ (a) Computer-simulated and (b) experimentally observed at RT.

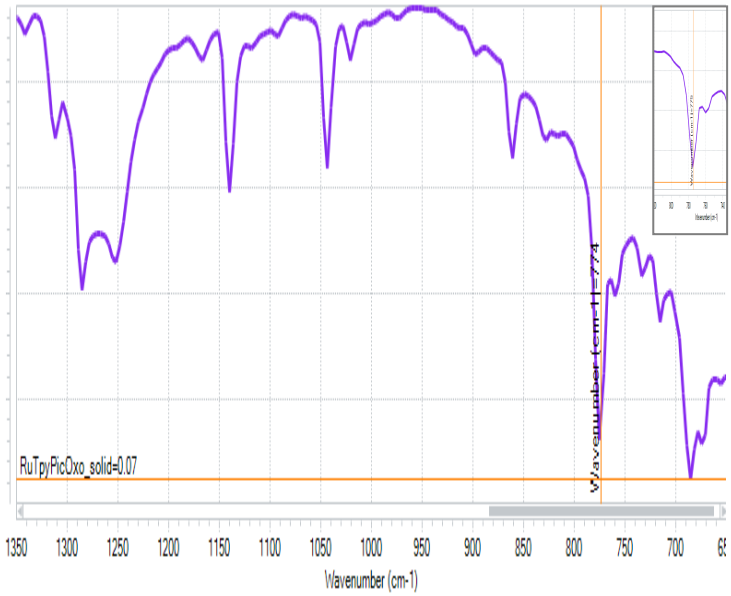

Figure S2 Solution IR-Spectrum of $[Ru^{IV}(tpy)(pic)(O)]$ (inset : Segmented Ru-Oxo stretching at 775cm^{-1} ($\nu_{Ru=O}$).

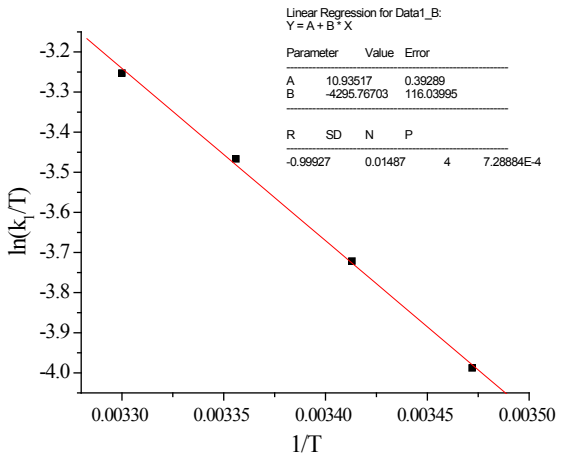

Figure S3 Eyring plots for the formation of $[Ru^{III}(tpy)(pic)OH]^{+}$ in the reaction of $[Ru^{II}(tpy)(pic)H_2O]^{+}$ with $S_2O_8^{2-}$ at pH 5.0.

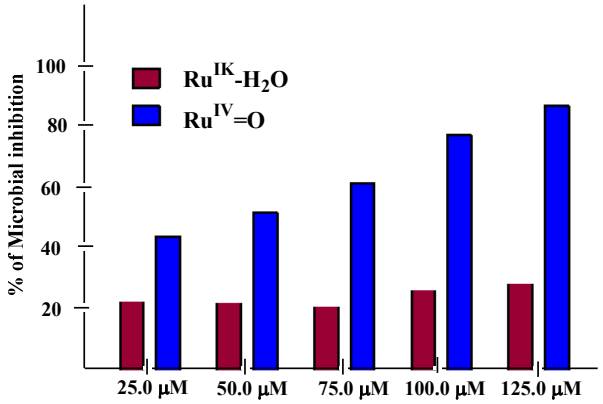

Figure S4 The antimicrobial activity of $[Ru^{II}(tpy)(pic)H_2O]^{+}$ complex in presence of $S_2O_8^{2-}$ on gram positive bacteria.