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Reactions of polyhomofunctional organic compounds: 3: Kinetics of hydrolysis of ethylene bridged salicylaldimine Schiff base and its mononuclear copper (II) complex

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Kinetic studies of hydrolysis of the two isochemical azomethine sites present in 1,2-bis(salicylidinimino)ethelene (**1**) abbreviated as EDA-Sal and one of its novel mononuclear copper (II) complex abbreviated as Cu(EDA-Sal) (**2**) have been studied in the varied *p*H range 1-12, and at different temperatures. The investigations indicate that based on *p*H, the aliquot (**1**) exists in several acid-base forms. The acid-base equilibrium and resonance effects have been found to be responsible for near simultaneous hydrlysis of azomethine sites present in the molecules. The repetitive spectral profiles of both the selected compounds reveal that the kinetic mixtures exhibit isosbestic points in the entire *p*H range of study, indicating the involvement of only two absorbing species throughout the reaction path. The hydrolysis follows pseudo-first order kinetics for both Schiff base, and its corresponding complex. Interestingly, except in the acidic range, the complex is found to be stable. The difference in rate of hydrolysis of (**2**) from that of (**1**) and the probable influencing factors are discussed. By Arrhenius and Eyring methods, activation energy E_a and other thermodynamic parameters such as $\Delta H^{\#}$, $\Delta G^{\#}$ and $\Delta S^{\#}$ are evaluated.

Keywords: EDA-Sal, Cu(EDA–Sal), Hydrolysis, Isosbesticity, Thermodynamic Parameters