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# Kinetic and mechanistic studies on the hypochlorite oxidation of 1-phenyl ethanol and its para substituted derivatives in aqueous acetic acid medium

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**Abstract:** Kinetic studies of the oxidation of 1-phenyl ethanol and some of its para substituted derivatives by hypochlorite have been studied in aqueous acetic acid medium. The reaction showed first order dependence on both [1-phenyl ethanol] and [hypochlorite]. The reaction did not induce the polymerisation of added acrylonitrile and rules out the involvement of any radical intermediate in the reaction. The rate of reaction found to increase with increase in dielectric constant of the medium. The order of reactivity among the studied alcohols is p - $CH_3$ > - H > p – Cl > p – $NO_2$. Plots of log $k_2$ versus Hammett's substituent constant ($\sigma$) has been found to be linear with a negative slope indicating an electron deficient carbon centre in transition state. Thermodynamic parameters were determined and a suitable mechanism is proposed in concordance with the obtained results.

**Key words** : 1-phenyl ethanol, para substituted 1-pheny ethanols, Hypochlorite, kinetics, mechanism.



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