



**Kinetic And Mechanistic Studies of Ir<sup>3+</sup> Catalysed Oxidation of D-Ribose By Vanadium (V) In Perchloric Acid Medium**

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**ABSTRACT**

*D-ribose and vanadium(V) reacts in perchloric acid medium at 313 K, vanadium(V) is reduced to vanadium(IV) and D-ribose oxidised to formic acid. In this reaction 1 mol of D-ribose consumes 10 mol of vanadium (V). The reaction follows complex kinetics, being first order each in D-ribose and vanadium (V). The rate of reaction increases on increasing perchloric acid concentration. Variation of ionic strength of the medium on addition of various amounts of sodium perchlorate had no effect on the rate, indicates that at least one of the reacting species in rate determining step was molecular in nature. The activation parameters have been determined. The rate law has been evaluated as*

$$\frac{-d\ln[V^{5+}]}{dt} = k_{\text{obs}} = \frac{k_1 k_2 k_3 [D\text{-ribose}][Ir^{3+}]}{k_{-1} k_{-2} + k_{-1} k_3 + k_2 k_3 [Ir^{3+}]}$$

**Keywords:** D-ribose, vanadium (V), perchloric acid, catalysis, oxidation, kinetics, mechanism.

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