



## **Kinetics Of Oxidation Of Trehalose By Protonated N-Bromosuccinimide Using Rh (III) Chloride As Homogeneous Catalyst**

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### **ABSTRACT**

*The kinetic oxidation of D(+) trehalose (tre) by protonated N- bromsuccinimide (NBS) i.e. N<sup>+</sup>BSH in presence of Rh(III) as homogeneous catalyst using Hg(OAc)<sub>2</sub> as bromide ions scavenger have been investigated at 45°C. The reaction shows first order kinetics with respect to Rh (III) throughout its variation. First order kinetics was observed with respect to lower [NBS], [trehalose] and [H<sup>+</sup>], but tends towards zero order at their higher concentrations. Nil effects of [Hg (OAc)<sub>2</sub>], [succinimide], [Cl<sup>-</sup>] and ionic strength of medium were observed. Protonated N-bromsuccinimide, N<sup>+</sup>BSH, and chloro complex of Rh(III) i.e. [RhCl<sub>5</sub>(H<sub>2</sub>O)]<sup>2-</sup>, have been postulated as the reactive species of NBS and Rh(III) chloride in acidic medium respectively. On the basis of observed kinetic data, spectrophotometric evidence and various activation parameters calculated at four different temperatures, a suitable reaction mechanism has been proposed for the Rh(III)- catalyzed oxidation of D(+) trehalose by NBS in acidic medium. The main oxidation products were identified as arabinonic acid and formic acid for the aforesaid reaction.*

**Keywords:** Kinetics, Trehalose, Oxidation, Protonated N-bromsuccinimide, Rh (III)- Catalysis.

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