

Oxidation of N-benzyl-N-methylhydroxylamines to nitrones. A mechanistic study.

Hassan, Azfar; Wazeer, Mohammed I. M.; Ali, Sk. Asrof. Chemistry Department, King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia. Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry (1998), (2), 393-400. Publisher: Royal Society of Chemistry.

Abstract

Oxidn. of various N- (o-, m-, p- substituted benzyl)-N-methylhydroxylamines has been carried out using mercury(II) oxide and p-benzoquinone (p-BQ) as oxidants. Hammett plots have been obtained with neg. ρ values, showing the development of a pos. center in the transition state. The unstable E nitrones, which readily isomerize to the more stable Z nitrones, are obtained in appreciable quantities and in some cases as the major product. A considerable deuterium isotope effect is obsd. in the oxidn. process. The overall picture of the mechanistic pathway involves electron transfer from nitrogen to the oxidant followed by hydrogen abstraction.