

High Activity of Binuclear Cobalt(II) Complex for Ethylene Evolution from 1-Aminocyclopropane-1-carboxylic Acid in the Presence of Hydrogen Peroxide

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The binuclear Co(II) and Mn(II) complexes with H₅(HXTA), where H₅(HXTA) represents N,N'-(2-hydroxy-5-methyl-1,3-xylylene)bis(N-carboxymethylglycine), induced a strong ethylene evolution from 1-aminocyclopropane-1-carboxylic acid (ACC) in the presence of hydrogen peroxide, whereas activities of the corresponding Fe(III), Ni(II), and V(III) complexes were found negligible. Based on spectroscopic results and mass-spectral data it is proposed that a peroxide adduct of binuclear Co(II) (and Mn(II)) complex with η¹-coordination mode interacts with ACC, which is chelated to a binuclear cobalt complex leading to facile oxidative degradation of ACC and to evolution of ethylene.