

EPR AND ENDOR EXPERIMENTS ON OXALATE DECARBOXYLASE. Alexander Angerhofer, Alex Nappi, Mario Moral, Nigel Richards University of Florida, Department of Chemistry, Box 117200, Gainesville, FL 32611.

Oxalate decarboxylase (OxDC) is a Mn-dependent bicupin enzyme which catalyzes the redox-neutral heterolytic carbon-carbon cleavage of the protonated oxalate monoanion. We are using the catalytically inactive site-directed mutant E280Q which has Mn(II) bound only in the N-terminal cupin domain as a model for the active site in order to study the binding modes of oxalate. ENDOR experiments on E280Q OxDC saturated with doubly ^{13}C labeled oxalate showed only one ^{13}C hyperfine coupling tensor at both low and high pH values indicating bidentate binding of both the oxalate monoanion as well as the dianion to the N-terminal Mn(II). The pH dependence of the Mn(II) EPR signals at 14.5 T provide additional proof that oxalate is tightly bound over the pH range between 4 and 8.5.