

Properties of superoxide radicals and biological function of superoxide dismutase

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The one-electron reduction of O_2 produces superoxide radicals and occurs in a wide range of both chemical and metabolic processes. There is considerable evidence that in biochemical systems O_2 can give rise to the even-more toxic hydroxyl radical. Kinetic data have subsequently shown, that Haber-Weiss reaction is too slow to be of significance. However, this reaction occurs more rapidly when catalysed by chelated metal. Thus, superoxide dismutase, which catalyzes the disproportionation of the superoxide radicals is an essential constituent of all organisms that utilize O_2 . This enzyme has been assumed to play a role in protecting the cells from the deteriorative effects of O_2^- and of other active species of oxygen derived from superoxide.