

PULSE RADIOLYSIS STUDIES OF AZA ANALOGUES OF NUCLEIC ACID COMPONENTS

M. Faraggi and I. Rosenthal

The reaction of hydrated electron and OH radical with the anticancer drug σ -azacytidine and other aza-nucleic acid analogues was measured. It was found that the reaction of both radicals is fast, approaching the diffusion controlled process. The transient spectra of the radicals resulting from the reactions of OH radicals and e_{aq}^- were determined. Normally these spectra exhibited maxima at $\lambda \sim 285$ nm and a shoulder at ~ 350 nm.

PROPERTIES OF CUPRIC-HYDRIDE FORMED IN THE REACTION OF AQUA CUPROUS IONS WITH HYDROGEN ATOMS. A PULSE-RADIOLYTIC STUDY⁽¹⁾

W. A. Mulac* and D. Meyerstein

The spectrum of $Cu-H_{aq}^+$ formed via $Cu^+ + H \rightarrow Cu-H_{aq}^+$ in aqueous solutions was determined. In neutral solutions it decomposes via $Cu H_{aq}^+ + H_2O \rightarrow Cu_{aq}^{2+} + H_2 + OH_{aq}^-$ with a rate of $4 \times 10^3 s^{-1}$. The properties of $Cu-H_{aq}^+$ were considered and compared with those of similar $Cu^{II} - R$ compounds.

REFERENCE:

1. Mulac, W. A. and Meyerstein, D., Inorg. Chem., in press.

REACTIONS OF B_{12r} WITH ALIPHATIC FREE RADICALS. A PULSE RADIOLYSIS STUDY⁽¹⁾

W. A. Mulac* and D. Meyerstein

The spectra of the intermediates formed in the reactions of B_{12r} with the free radicals, $Br_2^{\cdot-}$, $CO_2^{\cdot-}$, $\cdot CH_2C(CH_3)_2OH$, $\cdot C(CH_3)_2OH$, $\cdot CH_2CHO$ and $CH(OH)CH_2OH$ were determined. The results indicate that $Br_2^{\cdot-}$ oxidizes B_{12r} to B_{12a} via an inner sphere mechanism, and $CO_2^{\cdot-}$ reduces B_{12r} to B_{12s} . All the aliphatic free radicals studied, $\cdot R$, react with B_{12r} yielding as the first product a pseudo coenzyme denoted $Co^{III}-R$. $Co^{III}-CH_2C(CH_3)_2OH$ is stable for over a second in the pH range 3-10 as is $Co^{III}-CH_2CHO$. The latter compound hydrolyzes in acid solutions to yield B_{12a} and CH_3CHO . $Co^{III}-C(CH_3)_2OH$ and $Co^{III}-CH(OH)CH_2OH$ decompose

*Argonne National Laboratory, Argonne, IL.