Electronic Supplementary Data

Oxidation of glycine by diperiodatocuprate(III) in aqueous alkaline medium

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Fig. S1 - Spectroscopic changes occurring in the oxidation of glycine by diperiodatocuprate (III) at 25°C with scanning time interval of 1 minute.

Fig. S2 - The plot of \( \log k_{\text{obs}} \) versus \( I^{1/2} \) was linear with positive slope.
Fig. S3 - Effect of temperature on the oxidation of glycine by diperiodatocuprate (III) in aqueous alkaline medium.

**Rate derivation**

According to Scheme 1

\[
\text{Rate} = \frac{-d[DPC]}{dt} = k [\text{Complex}] = \frac{k K_1 K_2 K_3 [\text{GLY}]_f [DPC]_f [\text{OH}^-]_f}{[\text{H}_3\text{IO}_6^{2-}]} \tag{I}
\]

The total concentration of DPC is given by

\[
[DPC]_T = [DPC]_f + [\text{Cu(OH)}_2(\text{H}_3\text{IO}_6)(\text{H}_2\text{IO}_6)]^{3+} + [\text{Cu(OH)}_2(\text{H}_3\text{IO}_6)]^{+} + \text{Complex (C)}
\]

where T and f refer to total and free concentrations.

\[
[DPC]_T = [DPC]_f + K_1 [\text{DPC}] [\text{OH}^-] + \frac{K_1 K_2 [\text{OH}] [\text{DPC}]}{[\text{H}_3\text{IO}_6^{2-}]} + \frac{K_1 K_2 K_3 [\text{DPC}][\text{OH}^-][\text{GLY}]}{[\text{H}_3\text{IO}_6^{2-}]} \tag{II}
\]

\[
[DPC]_f = \frac{[\text{H}_3\text{IO}_6^{2-}]}{[\text{H}_3\text{IO}_6^{2-}] + K_1 [\text{OH}^-][\text{H}_3\text{IO}_6^{2-}] + K_1 K_2 [\text{OH}^-][\text{H}_3\text{IO}_6^{2-}] + K_1 K_2 K_3 [\text{OH}^-][\text{GLY}]} \tag{II}
\]
Similarly,

\[
[\text{OH}^-]_f = [\text{OH}^-]_i + [\text{Cu(OH)}_2(\text{H}_3\text{IO}_6)(\text{H}_2\text{IO}_6)]^+ + [\text{Cu(OH)}_2(\text{H}_3\text{IO}_6)_2]^+ + \text{Complex (C)}
\]

\[
[\text{OH}^-]_r = [\text{OH}^-]_i + K_1[\text{OH}^-][\text{DPC}] + \frac{K_1K_2[\text{DPC}][\text{OH}^+][\text{GLY}]}{[\text{H}_3\text{IO}_6^{2-}]} + \frac{K_3K_4K_5[\text{DPC}][\text{OH}^+][\text{GLY}]}{[\text{H}_3\text{IO}_6^{2-}]} - [\text{DPC}][\text{OH}^-][\text{DPC}][\text{GLY}]
\]

In view of low concentration of DPC used, the second, third and fourth term can be neglected. Hence,

\[
[\text{OH}^-]_r = [\text{OH}^-]_i \quad \text{(III)} \quad \text{and} \quad [\text{GLY}]_r = [\text{GLY}]_i \quad \text{(IV)}
\]

Substituting (II), (III), and (IV) in (I) and omitting the subscripts T and f, we get,

\[
\text{Rate} = \frac{-d[\text{DPC}]}{dt} = \frac{k K_1K_2K_3[\text{DPC}][\text{GLY}][\text{OH}]}{[\text{H}_3\text{IO}_6^{2-}] + K_1[\text{OH}^-][\text{H}_3\text{IO}_6^{2-}] + K_1K_2[\text{OH}^-] + K_1K_2K_3[\text{OH}^-][\text{GLY}]} \quad \text{(V)}
\]