Interactions Between a Cyclic Peptide and Cytochrome c: Evidence for the Formation of Two Encounter Complexes

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Electron-transfer (ET) reactions occur between a negatively charged cyclic metallopeptide $[\text{Ru(bpy)}_2(\text{phen-am})\text{-cyclo(Cys-Glu-D-Glu-Glu-Pro-Glu-D-Glu)}]^{3^-} = \text{Rucyclic}$, and ferricytochrome $c = \text{Cyt} c$, in which an acetamido linker was used to attach the ruthenium polypyridyl complex to the cysteine side chain of a head to tail cyclic peptide. Photoinduced electron transfer can occur via parallel pathways that involve two different encounter peptide-protein complexes. That the ET rate constants of both encounter complexes decrease with increasing viscosity demonstrates that the kinetics are gated by rate-limiting configurational changes occurring within the complexes.

NMR experiments confirm that two separate conformations exist for Rucyclic. The two conformations of Rucyclic might be arising from the cis/trans isomerization of proline and result in the formation of two encounter complexes when interact with Cyt $c$. 

![Diagram of Rucyclic and Cytochrome c interaction]

Cys—Glu—D-Glu—Glu—Pro—Glu—D-Glu