

Synthesis of novel metalloflavoporphyrins and their $1e/2e$ transfer studies

B B SAHOO, G PANDAY, A AWASTHI and S M S CHAUHAN
Department of Chemistry, University of Delhi, Delhi 110 007, India

In cytochrome P450 reductase, the flavin accepts electrons from NADH and transfers them to the porphyrin-Fe of native cytochrome P450 in biomembranes. Synthesis of a new set of covalently linked flavoporphyrins by an ester linkage between flavin and porphyrin moieties and their characterization by FAB mass, $^1\text{H NMR}$, IR, optical absorption and emission spectroscopies are reported in order to understand the $2e/1e$ transfer from flavin to iron porphyrin in flavohemeproteins in membranes. The proximate conformations of flavin and porphyrin rings are demonstrated by $^1\text{H NMR}$ and computer modelling studies. The porphyrin and flavin rings of *ortho* linked flavoporphyrins are in close proximity to each other, whereas flavin moieties are remote from the porphyrin ring in the *meta* and *para* linked flavoporphyrins. Manganese(III) complexes of these flavoporphyrins have been prepared and their cyclic voltammetric studies reveal that the flavin reduction potentials, $\text{Fl}_{\text{ox}} + e^- = \text{Fl}^-$ and $\text{Fl}^- + e^- = \text{Fl}^{2-}$ have been anodically shifted by the proximity of the linked porphyrin moiety.

