

haematoporphyrin, (3) the isomers 2(4)-1-hydroxyethyl-4(2)vinyl deuteroporphyrin, (4) two stereoisomers of *o,o'*-diacetyl haematoporphyrin, (5) two positional isomers of 2(4)-*o*-acetyl-4(2)vinyl deuteroporphyrin and (6) components with elution properties that are similar to those of protoporphyrin. In aqueous solution at pH \approx 7, only three ((1), (3) and (6)) of these major components are stable. Cellular uptake, efficiency as photosensitizers and binding to serum proteins increase in the mentioned order. Further data are presented.

Comparative study of the primary events in the photolysis of hemoglobin systems by picosecond absorption spectroscopy

A.V. GUZZO, J.A. HUTCHINSON and L.J. NOE

Department of Chemistry, University of Wyoming, Laramie, WY 82071 (U.S.A.)

Research involving the photolysis of six-coordinate Fe(II)-CO and Fe(II)-O₂ complexes of hemoglobin (Hb) and myoglobin (Mb) has been a subject of intense interest ever since Gibson's [1] initial description of the photoinitiated recombination kinetics of CO with deoxyHb and Mb. The primary reason for interest in this research area is derived from the ability to interrogate the dynamics of re-ligation of photolyzed heme optically in various time frames, ranging from picosecond to millisecond, in order to gain insight into the cooperative binding of O₂ to Hb. In this context we wish to discuss our most recent picosecond photodissociation experiments on solutions at 5 °C of the O₂, CO and NO derivatives of Mb, Hb and certain synthetic analogues.

In our presentation we place emphasis on the comparative aspects of the dynamics of the initial or primary stages of photolysis and geminate recombination of these molecules, as determined by their transient photoproduct absorption spectra.

1 Q.H. Gibson, *J. Physiol.*, 134 (1956) 112 - 122, 123 - 124.