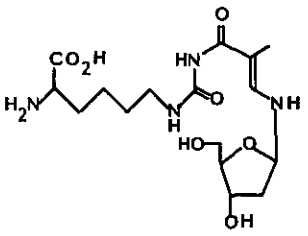
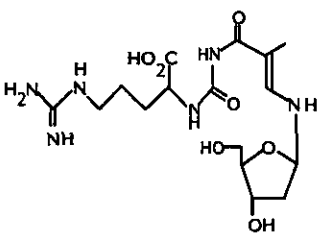
# CHEMISTRY OF NUCLEOSIDE-AMINO ACID ADDUCTS AND ITS RELEVANCE TO PHOTOINDUCED LESIONS

Isao Saito, Hiroshi Sugiyama, M. B. Gupta, and Teruo Matsuura
Department of Synthetic Chemistry, Kyoto University

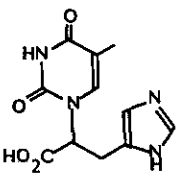
Photobiologists are intrigued by the possibility that the formation of DNA-protein adduct is an important mode of UV-induced damage in biological systems. Molecular biologists are examining the feasibility of using UV-cross-linking as a means of determining contact points in nucleic acid-protein complexes. Organic photochemists are exploring the structures and the mechanism of the adduct formation. Despite many approaches, very little is known about the chemistry of covalently linked DNA-protein adducts. We investigated a number of relevant model systems and have succeeded to characterize several important nucleoside-amino acid addcuts formed in UV-irradiation of pyrimidine or purine nucleosides with amino acids in aqueous solutions. Some of these are shown below.



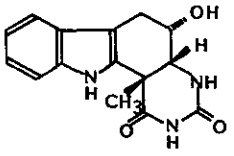
(Thd and Lys, 0 °C)



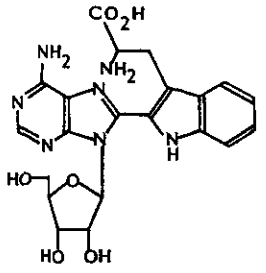
(Thd and Arg, 0 °C)



(Thd and His)



(Thy and Trp)



(8-Br-Ado and Trp)

Chemistry and the mechanism of the addcut formation as well as its characterization in UV-irradiated DNA-histone complexes will be discussed.