

**Binding Studies of Cationic meso-tetra(*p*-trimethylanilinium)-
porphine(TMAP) to the $d(A)_{12} \cdot d(T)_{12}$ Duplex and
the $d(T)_{12} \cdot d(A)_{12} \cdot d(T)_{12}$ Triplex**

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Interactions of meso-tetra(*p*-trimethylanilinium)-porphine(TMAP) with a $(dA)_{12} \cdot (dT)_{12}$ duplex(DNA I) and a $(dA)_{12} \cdot 2(dT)_{12}$ triplex(DNA II) have been studied by using NMR, UV and CD spectroscopic methods. TMAP has a planar aromatic ring core and is considered to interact with DNA. The thermal stability of DNA I obtained from melting data increased significantly upon binding TMAP. For DNA II, the thermal stability of Hoogsteen base-paired strands decreased, but that of Waston-Crick paired strands increased a little. According to data obtained by 1H -, 2-dimensional NMR experiments and other spectroscopic methods, TMAP is considered to bind to both of DNA I and DNA II in the minor-groove at near the positions 4 and 5 of the DNA sequence. In the minor-groove of DNA, one of four positive groups of TMAP is regarded to interact to a negative phosphate group of one strand of DNA, and another one of residual three positive groups of TMAP is regarded to interact to a phosphate group of the other strand of DNA. Therefore TMAP molecule might form a kind of cross-linkage between two DNA strands involving the Waston-Crick base-pairing.