

Addendum

Adenine and Cytosine : Basic Polarographic Behavior and Its Interpretation

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In reference to the statement on page 433 of the paper published by the same authors [*Bioelectrochem. Bioenerg.* 4, 425-446 (1977)] that non reducibility of the bases in double stranded polynucleotides is due to lack of available potential range in aqueous media and that hydrogen-bonding present in the double stranded configuration may sufficiently stabilize the bases to prevent their reduction, the former statement is only true as long as the double helix has not opened and the latter statement has been established (cf. studies by NÜRNBERG, VALENTA, and Collaborators, *e.g.*, Ref. 54-58). As long as the WATSON-CRICK inter-strand hydrogen bonds are intact, proton and electron transfer to the most readily reducible site involved in the rate determining step of adenine and cytosine reduction (1,6 and 3,4 N=C double bond, respectively) cannot occur. Only in those parts of the native DNA polynucleotide where the helix has been opened and where the WATSON-CRICK bonding is no longer operative, does reduction of the contained adenine and cytosine moieties becomes possible. Helix opening can be caused by the action of adsorption forces and the interfacial (solution/electrode) electric field.

References

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