Complexation Constants of Ubiquinone,0 and Ubiquinone,10 with Nucleosides and Nucleic Acid Bases

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UV spectrophotometric measurements were done on mixtures of the ubiquinones Ub,0 and Ub,10 in their monomeric form ($c < 10^{-5}$ mol/l) with the nucleosides; adenosine, cytidine, 2′-desoxy-adenosine, 2′-desoxy-quanosine, guanosine and thymidine, as well as the nucleic acid bases; adenine, cytosine, hypoxanthine, thymine and uracil. Applying the Liptay method, it was found that both ubiquinones form 1 : 1 interaction complexes with the nucleic acid components. The complexation constants were found in the order of 10^5 mol^{-1}. The calculated ΔG values were negative (~ -7.0 kcal/mol), suggesting a favoured hydrogen bridge formation. This is confirmed by the positive change of the entropy ΔS. The complexation enthalpies ΔH for all complexes are negative, suggesting exothermal interactions.

Key words: Ubiquinones; Nucleosides; Complexation; UV Spectra.