

OPTICAL SPECTROSCOPY
STUDIES OF THE INTERACTION
BETWEEN A NUMBER OF PLANT
ALKALOIDS AND THE DNA DOUBLE
HELIX IN AN AQUEOUS SOLUTION

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S u m m a r y

Optical spectroscopy methods have been used to study the interaction between the plant alkaloids – berberine, sanguinarine, and chelidonine – of the antitumor drug amitozine and the DNA in the aqueous solution. The corresponding electron spectra of absorption, fluorescence excitation, and fluorescence have been obtained and analyzed for free alkaloids and in the mixture with DNA. The hypochromic effect has been observed in the absorption spectra of berberine bound with DNA. The addition of DNA molecules to the solution of alkaloids was found to enhance the fluorescence intensity of berberine and to decrease that of sanguinarine and chelidonine. The fluorescence polarization is nonzero for all the three alkaloid–DNA mixtures. Those facts are the spectral manifestations of the alkaloid–DNA interaction. Possible mechanisms of DNA–alkaloid complex formation in aqueous solutions have been discussed.