

Thermodynamic and spectroscopic characterization of parathion-DNA interaction

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The interaction of the organophosphorus insecticide parathion (*O,O*-diethyl *O*-4-nitrophenyl phosphorothioate) with calf thymus DNA (CT DNA) and synthetic two-stranded oligomer of sequence 5'-d(TTGGATCCGAATTCAAGCTT)-3' was characterized by UV and circular dichroism (CD) spectroscopy at the insecticide/DNA molar ratio of 0.5. Parathion evoked a decrease of the melting temperature and a broadening of the transition range for CT DNA. Similar effect was observed for the synthetic oligomer but they were less pronounced. Parathion evoked a slight shift and an increase in the amplitude of the negative band in the CD spectra of both DNAs. The results indicate that parathion perturbs the thermal stability of DNA, which is evidence that the insecticide may directly interact with DNA.