



The effect of the short wavelength ultraviolet radiation and its implication for the origin of life

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The dimerization and reversion efficiency of the ultraviolet radiation in the UVB and the UVC range were quantified on polycrystalline uracil thin layers irradiated with quasi-monochromatic radiation using interference filters of a half-bandwidth of 10 nm. The dimer formation and monomerization (reversion) dose–effect relations were determined by optical spectroscopy. The decrease of the absorbance of the uracil thin layer at 288 nm was taken as a measure of the dimer formation, while the increase of the absorbance of a completely irradiated (until reaching the saturation level) uracil layer was the sign of the monomerization. The two processes in the UVB and the UVC range take place simultaneously, the individual characterization of the dimerization efficiency was performed from the initial slope of the dose–effect function and an action spectrum for dimerization was constructed. The reversion efficiency was found practically the same with all of the investigated wavelengths. The possible consequences of the reversion of dimers are discussed.