

INFLUENCE OF FOLIC ACID ON FREE RADICAL PROCESSES IN SKIN INDUCED BY UV LIGHT

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Folic acid is a water-soluble vitamin in the B-complex group. Folates are important cofactors in the transfer and utilization of one-carbon-groups and play a key role in many metabolic processes. Folates play essential roles in the remethylation of homocysteine to methionine and S-adenosylmethionine (SAM), providing essential methyl groups for numerous biological reactions. Folates donate one-carbon units in the process of nucleotide biosynthesis with implications for the regulation of gene expression, transcription, chromatin structure, genomic repair and genomic stability.

Folates influence the antioxidative-oxidative balance. Folate has direct antioxidant effects, interact with endothelial NO synthase (eNOS) and affects on cofactor bioavailability for NO synthesis.

Folic acid is a photosensitive compound that undergoes photolysis by UV, and its photodegradation leads to the formation of specific photoproducts such as p-aminobenzoyl-L-glutamic acid, 6-formyl pterin and pterin-6-carboxylic acid (PCA). PCA is the most reactive species, forming as a result of folic acid photodegradation.

An X-band (9.3 GHz) electron paramagnetic resonance (EPR) spectrometer and Rapid Scan Unit was applied to examine changes of free radicals concentration in skin cells after UV irradiation. We performed comparative analysis of integral intensities of absorption lines for two times of sample irradiation: 5 and 15 min. g-Values were calculated from resonance condition and linewidths were determined. UV irradiation causes increase of free radical concentration in skin cells. This effect rises for higher time of irradiation. Higher amounts of free radicals were during irradiation in the presence of folic acid in skin cell culture.