

Effect of UV Radiation in the C Range on the Free Amino Acid and Total Folate Contents of Leaves of the Pea *Pisum sativum*

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Abstract—The effect of UV radiation in the C range (UVC) on the free amino acid and total folate contents of leaves of cultivated pea *Pisum sativum* L. was studied. It was found that one of the rapidly revealed consequences of UVC irradiation is the photolysis of total folates and pteridines. The photolysis of folates in the plant was shown to yield the stable compound pterin-6-carboxylic acid. It was assumed that this compound can photosensitize the formation of singlet molecular oxygen. Pterin-6-carboxylic acid strongly fluoresces on exposure to UVC radiation. The relative fluorescence quantum yield of pterin-6-carboxylic acid at 20°C was found to be ≈ 2.0 (the absolute fluorescence quantum yield is ≈ 0.58). Since folates are responsible for the synthesis of a number of amino acids, the changes in the free amino acid composition and contents after exposure to UVC radiation for 0.5, 1.0, 10, and 40 min were investigated. The qualitative and quantitative glycolysis-induced changes in the free amino acid composition and contents of leaves of the UVC-irradiated plants were discussed.