

S6-P21**UV-A to Red Light Induced Neutrophil Extracellular Traps**

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Neutrophils play an important role in the pathogenesis of inflammatory, autoimmune, and oncological diseases. In this study, we investigated the role of radiation in a wide range of wavelengths, from UV-A to red visible light, based on the concept of photoacceptance by two cytochromes: cytochrome *b*₅₅₈ and cytochrome *c* oxidase. Raman spectroscopy was applied to record characteristic Raman frequencies of radicals, particularly hydrogen peroxide and hypochlorous acid as well as the spectrum of citrulline in the low-frequency lattice vibrational modes. Using selective inhibitors of NADPH oxidase (apocynin) and PAD4 (GSK484), we have demonstrated different effectiveness of NET suppression depending on the activation wavelength. We recorded sharp peaks of ROS and citrulline in the process of neutrophil irradiation, indicating the involvement of intracellular ROS during light exposure. In conclusion, we believe that the development of new drugs designed to suppress NETs can lead to the inhibition of the NET formation at sites of UV and visible light exposure and, as a result, to decrease in the symptoms of UV-induced photoaging and other organ damages.