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**An Examine of Photo Oxygenation Process on Antiviral Drug**

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**ABSTRACT**

Photooxygenation is a photochemical process in which oxygen is incorporated into molecules under the influence of light. This process is particularly relevant in the development and enhancement of antiviral drugs. During photooxygenation, a drug molecule is exposed to light, typically in the presence of a photosensitizer, leading to the formation of reactive oxygen species (ROS) such as singlet oxygen. These ROS can interact with the antiviral drug, modifying its chemical structure by adding oxygen atoms to specific sites. This modification can alter the drug's antiviral activity, potentially enhancing its ability to target and neutralize viruses. For instance, photooxygenation can increase the drug's specificity for viral components or improve its ability to penetrate infected cells. Additionally, this process can be used to activate prodrugs—compounds that are inactive until they undergo photooxygenation, at which point they become potent antiviral agents. Furthermore, photooxygenation can help in overcoming drug resistance, a significant challenge in antiviral therapy, by generating new active forms of drugs that can bypass resistance mechanisms. However, the stability and safety of these photooxygenated drugs must be carefully studied to ensure their effectiveness and minimize any potential side effects.