



CERTIFICATE NO : ICRESTMH /2024/C0824837**A Study of Photochemical Process on Drug Molecules****Samatha Muchu**Research Scholar, Ph. D. in Chemistry
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ABSTRACT

Photochemical processes involve the absorption of light by drug molecules, leading to various chemical reactions that can significantly alter their structure and function. When drug molecules absorb light, typically in the ultraviolet or visible spectrum, their electrons become excited to higher energy states. This excitation can result in a range of photochemical reactions, including isomerization, dimerization, and the breaking or forming of chemical bonds. These reactions can impact the drug's pharmacological activity, stability, and safety. For instance, some drugs may undergo photo degradation, where exposure to light reduces their efficacy by breaking down active ingredients. Conversely, photochemical reactions can also be harnessed to activate pro-drugs—compounds that are pharmacologically inactive until transformed by light into their active form. Understanding these processes is crucial in drug development, as it can inform the design of light-stable drugs, the proper storage conditions to avoid photo degradation, and innovative therapies like photodynamic therapy. This therapy uses light-activated drugs to target and destroy cancer cells, illustrating the potential of photochemical processes to revolutionize treatment approaches. Overall, photochemical processes play a critical role in the pharmacokinetics and therapeutic efficacy of drug molecules.