Photochemical repair of etheno adducts.

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The lipid peroxidation is a biological process that occurs uninterruptedly in our body. In this process reactive oxygen species (ROS) oxidize polyunsaturated fatty acids from the cell membrane. This process leads to reactive aldehydes such as malondialdehyde (MDA), which can interact with DNA bases forming the endogenous damages known as etheno adducts.
These lesions are present in many inflamed human tissues, making them convenient biomarkers for some types of cancers. Moreover, these ubiquitous lesions exhibit highly mutagenic properties and induce base transitions or transversions in mammal cells. Consequently, the understanding of their repair is of a great interest.
The etheno lesions are repaired enzymatically by the AlkyB by means of an oxidative mechanism.[1] Interestingly, it has been shown that the εdG adduct can react *in vitro* with singlet oxygen giving rise to the native 2'-deoxyguanosine (dG).[2]

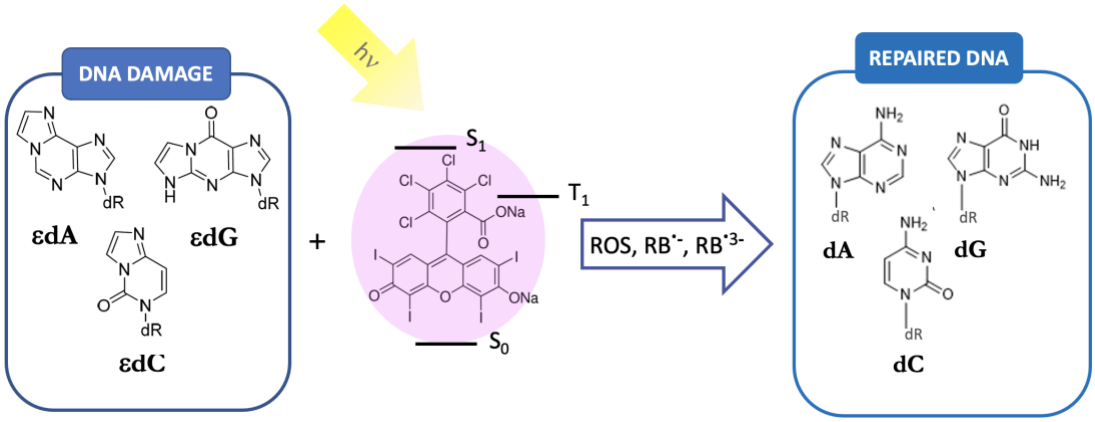

Figure. *Scheme of etheno damages repair by Rose Bengal (RB).*

This work presents a mechanistic study combining photochemical and photophysical techniques. Rose Bengal was used as a photosensitizer due to its capability to form $^1O_2$ and its low toxicity. High repair efficiencies were determined for all the etheno adducts, and new repair pathways, which consist in photoredox mechanisms, were proposed.

References

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