# SINGLET OXYGEN-INDUCED CITOTOXICITY AND MUTAGENESIS IN ESCHERICHIA COLI MEDIATED BY PHOTOSENSITIZATION OF METHYLENE BLUE

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Singlet molecular oxygen ($^1O_2$) is produced in mammalian cells under normal and pathophysiological conditions. In addition, some drugs and pigments can generate $^1O_2$ inside cells when irradiated by visible light. According this, the photosensitization of methylene blue (MB) promotes energy absorption and generates reactive oxygen species (ROS), such as $^1O_2$, which can cause damage to DNA, proteins and lipids. $^1O_2$ has been known as the one of main agent involved in oxidative stress and are related to apoptosis, mutagenesis and induction of degenerative diseases like cancer and also age. The aim of this study was to analyze one of the pathways in DNA repair related to oxidative damage, as well as the citotoxicity and mutagenesis induced in the direct treatment of *E.coli* CC104 (mutY-constitutive) and GM7724 (mutY deletion) with 15 µM plus light during 0-30 minutes. Both strains have shown a higher mutation frequency of and a lower survival rate. Our results suggest that extracellular singlet oxygen promotes DNA damage and mutY plays a main role in mutagenesis and cell death prevention.

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