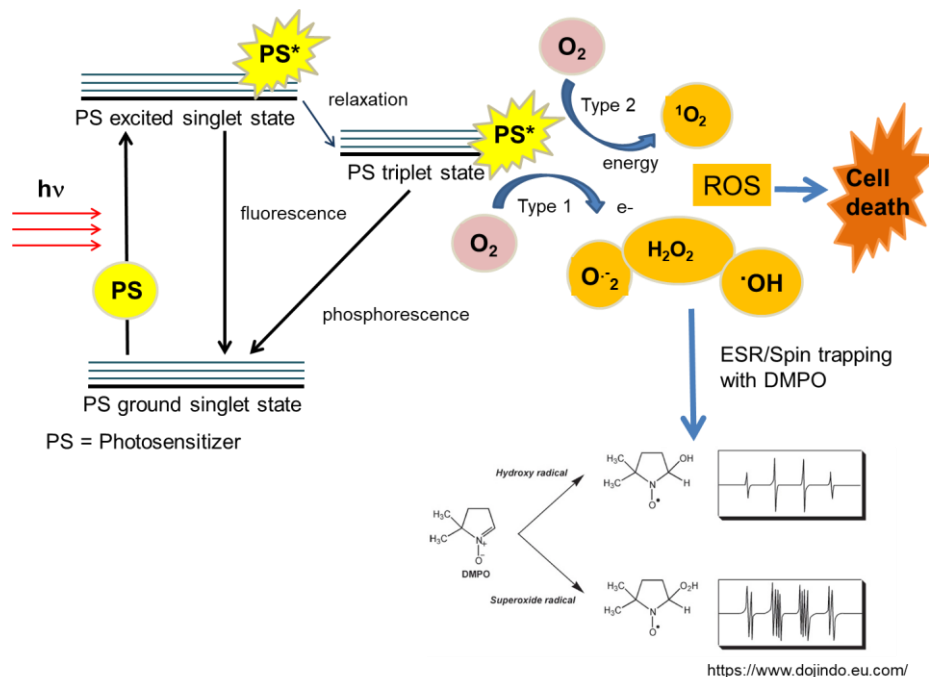


Reactive oxygen species detection using Electron Spin Resonance (ESR) Spectroscopy

Detection of ROS in photodynamic therapy

Photodynamic therapy is a medical treatment modality composing of light wavelength and photosensitizer. Its key mechanism involves the generation of reactive oxygen species (ROS) including hydroxyl radical, superoxide and singlet oxygen. Electron spin resonance (ESR) spectroscopy with spin trapping is a simple methodology for identification and quantitation of ROS. Relationships of ROS production and efficacy of photodynamic therapy in dental application have been demonstrated by Phutim-Mangkhalthon et al., 2020 and Saitawee et al., 2017.



Principle of Photodynamic therapy and ROS detection using ESR/spin trapping technique

References:

Phutim-Mangkhalthon A, Teerakapong A, Pippayawat P, Morales NP, Morkmued S, Pwasiri S, Priprem A, Damrongrungruang. Anti-inflammatory effect of photodynamic therapy using guaiazulene and red lasers on peripheral blood mononuclear cell. *Photodiagnosis and Photodynamic Therapy*, 2020;31:101747.

Saitawee D, Teerakapong A, Morales NP, Jitprasertwong P, Hormdee D. Photodynamic therapy of Curcuma longa extract stimulated with blue light against Aggregatibacter actinomycetemcomitans. *Photodynamic Therapy*, 2018;22:101-105.



ความเชื่อมโยงกับเป้าหมาย SDGs:

เป้าหมายที่ 3: การมีสุขภาพและความเป็นอยู่ที่ดี