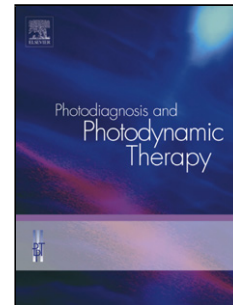


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# Assessment of singlet oxygen dosimetry concepts in photodynamic therapy through computational modeling

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## Highlights

- Blood flow compensates for oxygen consumption in photodynamic therapy (PDT).
- Blood flow affects stronger singlet oxygen production than initial oxygen presence.
- In high oxygen supply rates minor adjustments of initial oxygen are needed.
- A novel calculation of molecular oxygen - oxygen supply rate suitable combination.

## Abstract

**Background:** In photodynamic therapy (PDT) oxygen plays vital role in killing tumor cells and therefore its dosimetry is being thoroughly studied.

**Methods:** Light distribution into tissue is modelled for radiation-induced fibrosarcoma (RIF) and nodular basal cell carcinoma (nBCC), in order to study the influence of blood flow on singlet oxygen concentration effectively leading to cell death ( $[^1\text{O}_2]_{\text{rx}}$ ) on PDT, within this light distribution. This is achieved through initial oxygen supply rate ( $g_0$ ) and initial

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