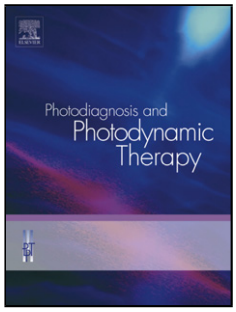

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Assessment of singlet oxygen dosimetry concepts in photodynamic therapy through computational modeling

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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 ($[^1O_2]_{rx}$) on PDT, within this light distribution. This is achieved through initial oxygen supply rate (g_0) and initial