

S1 Table. Main model parameters and associated values. All other model parameters are as in [1].
 (*) Value is rescaled by the square of the simulation system characteristic length (1 cm) and divided by the system characteristic time (1 sec) multiplied by the oxygen diffusivity [2] ($1 \times 10^{-5} \text{ cm}^2 \text{ s}^{-1}$).

Parameter	Value	Reference
Tumor proliferation rate	1 day ⁻¹	[3]
Tumor necrosis threshold	0.5700	[3]
Tumor hypoxic threshold	0.5750	[3]
Oxygen diffusivity	1 (*)	[4]
Oxygen transfer rate from vasculature	5 (*)	[4]
Oxygen uptake rate by proliferating tumor cells	1.5 (*)	[4]
Oxygen uptake rate by hypoxic tumor cells	1.3 (*)	[4]
Oxygen uptake rate by tumor microenvironment	0.12 (*)	[4]
Oxygen decay rate	0.35 (*)	[4]
NP diameter d	100; 600; 1,000 nm	[5]
NP drug load	(variable)	Proportional to d
NP drug release	(variable)	Proportional to \sqrt{d}
Drug diffusivity	0.6 (*)	Initial value; varied over [0.01,1.00]
Drug decay rate	6hr half-life	Similar to Paclitaxel

References:

1. Wu, M., Frieboes, H.B., McDougall, S.R., Chaplain, M.A., Cristini, V., Lowengrub, J. The effect of interstitial pressure on tumor growth: Coupling with the blood and lymphatic vascular systems. *J Theor Biol* 320, 131-151 (2013).
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