Influence of the distributed time delays on the stability in the family of agniogenesis models

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Abstract

We propose a family of angiogenesis models, that is a generalisation of Hahnfeldt *et al.* model. Considered family of models is a system of two differential equations with distributed time delays. The global existence and the uniqueness of the solutions are proved. Moreover, the stability of the unique positive steady state is examined in the case when delay distributions are Erlang or piecewise distributions. Theorems guaranteeing the existence of stability switches and occurrence of the Hopf bifurcation are proved. Theoretical results are illustrated by numerical analysis performed for the parameters estimated by Hahnfeldt *et al.* (*Cancer Res.*, 1999).

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