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Delays and stability in pharmacodynamic modeling

Modeling of pharmacokinetic and pharmacodynamic processes (PK/PD) is of utmost interest in the development of drugs: quantitative characterisation of the time course of drug concentration in administration context is essential for approval by regulatory authorities. We present recent attempts at a proper mathematical representation of these time courses in the development of cancer drugs. In particular, the role of distributed time delays, either explicitly stated or implicitly introduced in the behavior of solutions, will be discussed. Stability of stationary solutions and possible oscillatory solutions (emerging from Hopf bifurcations) will be presented.