Application of nonstandard finite difference method to three compartment pharmacokinietics models

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Keywords: Pharmacokinetic, Intravenous injection , Intravenous infusion, Exact finite difference scheme, Nonstandard finite difference.

The complex nature of the analytical solutions to three compartment pharmacokinetic lead to discrete approximation of the continuous differential equation been mostly used. In this paper, we derived nonstandard finite difference scheme for three-compartment pharmacokinetic models. For the case when the system is homogeneous (models arising from IV bolus injection mode of administration), we give exact finite difference scheme while in the case of non-homogeneous (models arising from IV infusion route of administration), we provide scheme that has the same qualitative behaviour as the analytical solution for all step-sizes. Results of numerical experiments are presented.

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