

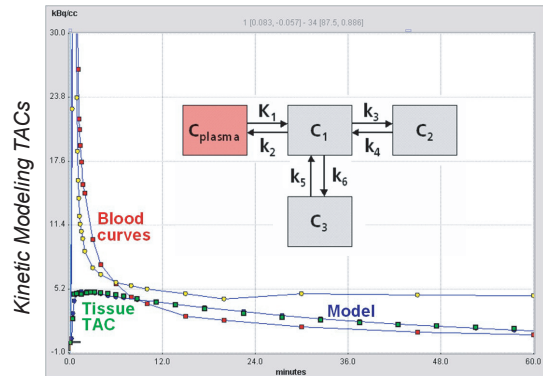
Tool for General Kinetic Modeling

Understanding of Tracers Requires Kinetic Modeling

Images in Nuclear Medicine represent the average tracer concentration during the acquisition interval. This uptake of tracer is dynamic in nature and depends on the tracer kinetics with respect to a given tissue. Only after characterizing this kinetics can the significance of the images really be appreciated. Models have successfully been employed for the analysis of tracer kinetics by specialized researchers since many years. The present PKIN modeling tool now gives an easy and intuitive access to the wealth of developed methods to a broader community.

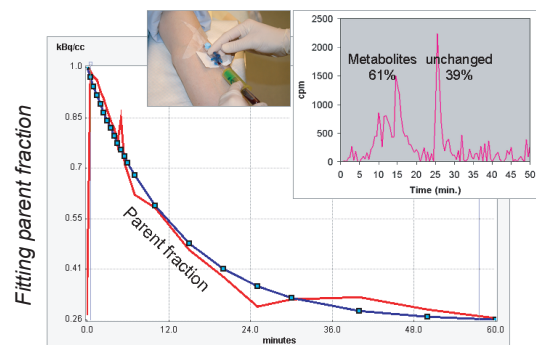
Supports Comprehensive and Intuitive Model-based Data Analysis

Blood and time-activity data of tissue regions can easily be imported into the modeling tool, even directly from the VOI tool. More than 40 model configurations are available to be fitted to the data. They allow for testing models of increasing complexity and cross-validation of the outcomes with different methods. The reliability of the resulting parameters is an important issue. It can be strengthened by employing common parameters in a multi-region fit. And it can be studied using Monte Carlo simulations and sensitivity functions. All results can readily be exported for statistical analysis.



Educates in Kinetics and Generates Simulation Data

Given the instantaneous tracer concentration in blood plasma and a specific kinetics, the expected tracer concentration in tissue is immediately displayed. The impact of one parameter on the outcome can thus easily be visualized and understood. Similarly, synthetic uptake data can be generated and analyzed with different models to assess the impact of model simplifications. To assess pixel-wise quantification methods, synthetic imaging studies can be generated wherein each pixel represents a different kinetic parameter combination.



Selected Models

- 1-,2-,3-Tissue compartments models
- Logan, Patlak plots
- Non-linear models
- Many different reference models
- Models for parent fraction (from V3.0)
- Model with metabolites and 2 input curves
- Multi-injection models
- Cardiac double-spillover models
- Over 40 model configurations

Selected Fitting Options

- Optional parameter restrictions
- Selective parameter enabling
- Multi-region fit with parameter coupling
- Fitting models to the input curve
- Fitting blood and kinetic parameters at the same time
- Weighted fitting
- Batch fitting with report generation