Simulator for Skin Pharmacokinetics

SKIN-CAD®

Version 6.1

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OUTLINE OF SKIN-CAD

SKIN-CAD® is software for skin-body pharmacokinetic simulation developed based on percutaneous absorption model. SKIN-CAD® can predict skin permeation amount and blood concentration by input of various model parameters. It can also analyze the effects of metabolism and binding in the skin, the enhancement by iontophoretic application, and the pharmacokinetic-pharmacodynamic model, etc.
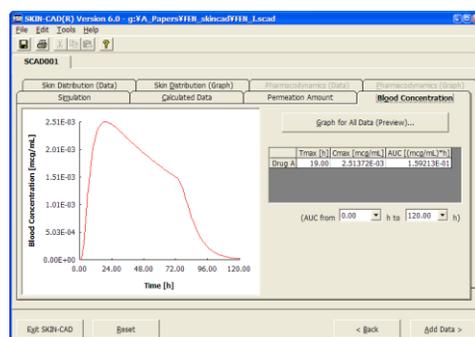
SKIN-CAD® screenshot

USER-FRIENDLY GUI

SKIN-CAD® includes GUI (graphical user interface) available on Windows OS, so users can operate easily from parameters input to simulation results display. Involved various features enable users to save or read data file, to edit graphs, to print data, to compare between calculated and observed data, and to show multiple data.

MODEL & INPUT PARAMETERS

Simulation Model
*Skin permeation model (2-layer or 1-layer)
*Drug-dissolved matrix system/skin permeation model
*Drug-dispersed matrix system/skin permeation model
*Vehicle compartment/skin permeation model

Input Parameters
*System application period, applied area
*Release characteristics from formulation
*Skin structure (thickness of each layer)
*Diffusion and partition coefficients in skin
*Body pharmacokinetic parameters (1-, 2- or 3-compartment model)

Optional Input Parameters
*Skin binding parameters (Langmuir or Freundlich type)
*Skin metabolism parameters (Michaelis-Menten or first-order kinetics)
*Conditions of iontophoretic application (electrorepulsion and/or electroosmosis)
*Pharmacodynamic parameters
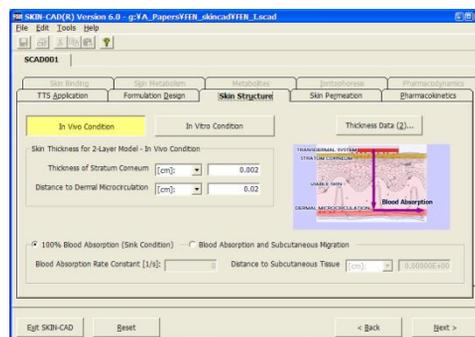
Parameters input

SKIN-CAD SIMULATION

Output Data

*Cumulative amount permeated

*Blood concentration

*Drug distribution in matrix/skin

*Pharmacologic effect

SKIN-CAD® can predict clinical performance using model parameters obtained from *in vitro* release or skin permeation studies. SKIN-CAD® simulation will provide useful data to design transdermal and topical drug delivery systems.
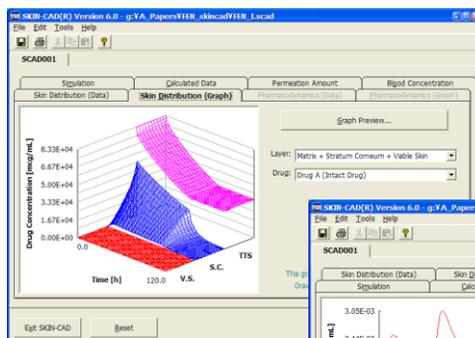
Drug distribution in matrix/skin
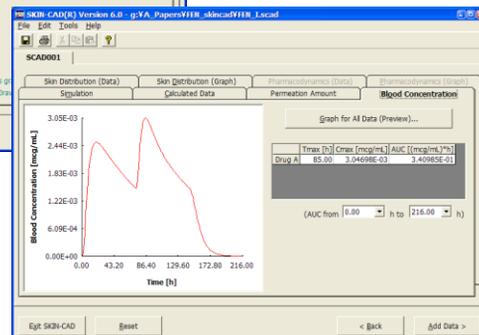
Blood concentration (multiple administration)

NEW FEATURES

Upgraded version (Version 6.1) provides the following new and improved features.

✓ compatible with Windows® Vista, 7, 8, 8.1

✓ compatible with 64-bit PC & OS

✓ resolved "dot-comma" problem of decimal point

✓ updated literature data about "skin thickness", "skin permeation" and "body pharmacokinetics"

✓ some improved functions

POTENTIAL OF SKIN-CAD

SKIN-CAD® can be used for optimal design of transdermal therapeutic systems (TTS) as well as for evaluation of various factors on skin permeation and blood concentration. It can also quickly provide you with the simulated data for systemic or topical application depending on model parameters. SKIN-CAD® will enable users to smoothly proceed from *in vitro* studies to clinical trial by PK-PD simulation at preclinical stage.

SKIN-CAD® is support software for R&D of transdermal drug delivery

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