

Package ‘caffsim’

February 28, 2017

Title Monte Carlo Simulation of Plasma Caffeine Concentrations by Using Population Pharmacokinetic Model

Version 0.1.0

Date 2017-02-27

Description

This package is used for publication of the paper about pharmacokinetics of plasma caffeine.

Gitbook <<http://asancpt.github.io/CaffeineEdison>> is created solely dependent on this R package.

Depends R (>= 3.3.2)

Encoding UTF-8

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LazyData true

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Imports mgcv, dplyr, ggplot2

NeedsCompilation no

URL <https://github.com/asancpt/caffsim>

BugReports <https://github.com/asancpt/caffsim/issues>

RoxygenNote 6.0.1

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ConcTime	Create a dataset of the concentration-time curve
----------	--

Description

ConcTime will create a dataset of the concentration-time curve

Usage

```
ConcTime(Weight, Dose, N = 20)
```

Arguments

Weight	Body weight (kg)
Dose	Dose of single caffeine (mg)
N	The number of simulated subjects

Value

The dataset of concentration and time of simulated subjects

See Also

<http://asancpt.github.io/CaffeineEdison>

Examples

```
ConcTime(Weight = 20, Dose = 200, N = 20)
ConcTime(20, 200)
```

ConcTimeMulti	Create a dataset of the concentration-time curve of multiple dosing
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Description

ConcTimeMulti will create a dataset of the concentration-time curve of multiple dosing

Usage

```
ConcTimeMulti(Weight, Dose, N = 20, Tau = 8, Repeat = 4)
```

Arguments

Weight	Body weight (kg)
Dose	Dose of single caffeine (mg)
N	The number of simulated subjects
Tau	The interval of multiple dosing (hour)
Repeat	The number of dosing

Value

The dataset of concentration and time of simulated subjects of multiple dosing

See Also

<http://asancpt.github.io/CaffeineEdison>

Examples

```
ConcTimeMulti(Weight = 20, Dose = 200, N = 20, Tau = 8, Repeat = 4)
ConcTimeMulti(20, 200)
```

Dataset	<i>Create a dataset for simulation of single dose of caffeine</i>
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Description

Dataset will create a dataset for simulation of single dose of caffeine

Usage

```
Dataset(Weight, Dose, N)
```

Arguments

Weight	Body weight (kg)
Dose	Dose of single caffeine (mg)
N	The number of simulated subjects

Value

The dataset of pharmacokinetic parameters of subjects after single caffeine dose following multi-variate normal

See Also

<http://asancpt.github.io/CaffeineEdison>

Examples

```
Dataset(Weight = 20, Dose = 200, N = 20)
Dataset(20, 500)
```

DatasetMulti	Create a dataset for simulation of multiple dose of caffeine
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Description

DatasetMulti will create a dataset for simulation of multiple dose of caffeine

Usage

```
DatasetMulti(Weight, Dose, N = 20, Tau = 24)
```

Arguments

Weight	Body weight (kg)
Dose	Dose of multiple caffeine (mg)
N	The number of simulated subjects
Tau	The interval of multiple dosing (hour)

Value

The dataset of pharmacokinetic parameters of subjects after multiple caffeine dose following multivariate normal

See Also

<http://asancpt.github.io/CaffeineEdison>

Examples

```
DatasetMulti(Weight = 20, Dose = 200, N = 20, Tau = 8)
DatasetMulti(20,500)
```

Plot	Create concentration-time curve after single dose of caffeine
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Description

Plot will create concentration-time curve after single dose of caffeine

Usage

```
Plot(ConcTime, log = FALSE)
```

Arguments

ConcTime	Concentration-time dataset having column names Subject, Time, and Conc (case-sensitive)
log	y axis log

Value

The concentration-time curve

See Also

<http://asancpt.github.io/CaffeineEdison>

Examples

```
Plot(ConcTime(Weight = 20, Dose = 200, N = 20))
```

PlotMulti

Create concentration-time curve after multiple doses of caffeine

Description

PlotMulti will create concentration-time curve after multiple doses of caffeine

Usage

```
PlotMulti(ConcTimeMulti, log = FALSE)
```

Arguments

ConcTimeMulti	Concentration-time dataset having column names Subject, Time, and Conc (case-sensitive)
log	y axis log

Value

The concentration-time curve

See Also

<http://asancpt.github.io/CaffeineEdison>

Examples

```
PlotMulti(ConcTimeMulti(Weight = 20, Dose = 200, N = 20, Tau = 8, Repeat = 4))
```

`UnitTable`*Unit data of PK parameters*

Description

A dataset containing information regarding unit data of pharmacokinetic parameters

Usage

```
UnitTable
```

Format

A data frame with 16 rows and 2 variables:

Parameters Abbreviated pharmacokinetic parameters

Parameter Pharmacokinetic parameters in full name

Source

<http://asancpt.github.io/CaffeineEdison>

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