Package 'caffsim'

June 5, 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

License GPL-3 | file LICENSE

LazyData true

Copyright 2017, Sungpil Han

Imports mgcv, dplyr, ggplot2

NeedsCompilation no

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

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

RoxygenNote 6.0.1

Maintainer Sungpil Han <shan@acp.kr>

R topics documented:

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*

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 *Create a dataset for simulation of single dose of caffeine*

Description

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

Usage

```
Dataset(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 pharmacokinetic parameters of subjects after single caffeine dose following multivariate 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*

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*

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

Index