Package 'caffsim'

August 15, 2017

Title Simulation of Plasma Caffeine Concentrations by Using Population Pharmacokinetic Model

Version 0.2.1

Date 2017-08-15

Description Simulate plasma caffeine concentrations using population pharmacokinetic model described in Lee, Kim, Perera, McLachlan and Bae (2015) <doi:10.1007/s00431-015-2581-x>.

Depends R (>= 3.3.2)

Encoding UTF-8

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LazyData true

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Imports mgcv, dplyr, ggplot2, shiny

NeedsCompilation no

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

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

RoxygenNote 6.0.1

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R topics documented:

`caffConcTime` *Create a dataset of the concentration-time curve of single oral administration of caffeine*

Description

`caffConcTime` will create a dataset of the concentration-time curve

Usage

```
caffConcTime(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

https://asancpt.github.io/caffsim

Examples

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

`caffConcTimeMulti` *Create a dataset of the concentration-time curve of multiple dosing of caffeine*

Description

`caffConcTimeMulti` will create a dataset of the concentration-time curve of multiple oral administrations of caffeine

Usage

```
caffConcTimeMulti(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

https://asancpt.github.io/caffsim

Examples

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

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

Description

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

Usage

```
caffDataset(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

https://asancpt.github.io/caffsim

Examples

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

caffDatasetMulti *Create a dataset for simulation of multiple dose of caffeine*

Description

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

Usage

```
caffDatasetMulti(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

https://asancpt.github.io/caffsim

Examples

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

caffPlot *Create concentration-time curve after single dose of caffeine*

Description

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

Usage

```
caffPlot(caffConcTimeData, log = FALSE)
```

Arguments

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

Value

The concentration-time curve

See Also

https://asancpt.github.io/caffsim

Examples

```
caffPlot(caffConcTime(Weight = 20, Dose = 200, N = 20))
```

`caffPlotMulti` *Create concentration-time curve after multiple doses of caffeine*

Description

`caffPlotMulti` will create concentration-time curve after multiple doses of caffeine

Usage

```
caffPlotMulti(caffConcTimeMultiData, log = FALSE)
```

Arguments

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

Value

The concentration-time curve

See Also

https://asancpt.github.io/caffsim

Examples

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

caffShiny — *Run shiny app to interactively simulate plasma caffeine concentration.*

Description

caffShiny will run an internal shiny app Caffeine Concentration Predictor in order to interactively simulate plasma caffeine concentration.

Usage

```
caffShiny()
```

Value

shiny app

See Also

https://asan.shinyapps.io/caff/

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

See Also

https://asancpt.github.io/caffsim

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