Package 'caffsim'

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Title Simulation of Plasma Caffeine Concentrations by Using Population Pharmacokinetic Model

Version 0.2.1

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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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`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)
```

---

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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