Package 'PKPDmodels'

February 19, 2015

Title Pharmacokinetic/pharmacodynamic models

Type Package

Version 0.3.2

Date 2012-01-14

Author Anne Dubois, Julie Bertand, France Mentre and Douglas Bates

Description Provides functions to evaluate common pharmacokinetic/pharmacodynamic models and their gradients.

Depends R(>= 2.13.0)

Imports compiler

Suggests lattice

Maintainer Douglas Bates <Bates@R-project.org>

License GPL (>= 2)

LazyLoad yes

URL http://PKPD.R-forge.R-project.org

Collate 'PKPDmodels.R'

Repository CRAN

Date/Publication 2012-01-15 20:48:08

NeedsCompilation no

R topics documented:

PKexpr *Expressions for PK models with linear elimination*

Description

Return a formula for the PK model with linear elimination according to the number of compartments, the administration form and the dosage pattern.

Usage

```
PKexpr(admin = c("bolus", "infusion", "oral"),
  dosage = c("sd", "md", "ss"), subst = list(), cpt = 1L)
```

Arguments

admin	form of administration of the drug, one of "bolus", "infusion" or "oral". Defaults to "bolus".
dosage	form of dosage, one of "sd" (single dose), "md" (multiple, equally-spaced doses) and "ss" (steady-state). Defaults to "sd".
subst	a list of formulas of substitutions to perform
cpt	scalar integer - the number of model compartments.

Value

a formula

Examples

```
## single-dose oral administration
PKexpr("oral", "sd")
```

PKmod *PK models with linear elimination*

Description

Create a model function with gradient evaluation (and, optionally, Hessian evaluation) for a model according to the number of compartments, the form of administration and dosage of the drug after performing any substitutions given.

Usage

```
PKmod(admin = c("bolus", "infusion", "oral"),
  dosage = c("sd", "md", "ss"), subst = list(), cpt = 1L,
  hessian = FALSE)
```

Arguments

admin	form of administration of the drug, one of "bolus", "infusion" or "oral". Defaults to "bolus".
dosage	type of dosage of the drug, one of "sd" (single dose), "md" (multiple dose) or "ss" (steady-state). Defaults to "sd".
subst	a list of formulas of substitutions to perform
cpt	scalar integer - the number of model compartments.
hessian	a logical value indicating whether the second derivatives should be calculated and incorporated in the return value.

Details

The substitutions are given as a list of formulas, such as `list(k ~ Cl/V, Cl ~ exp(lCl), V ~ exp(lV))`. They are applied left to right.

Value

a byte-compiled model function with gradient evaluation

Examples

```
## return a function with substitutions
PKmod("bolus", "sd", list(k ~ Cl/V, Cl ~ exp(lCl), V ~ exp(lV)))
```

---

subexpr *"Sub[stitute] expr[ession]"*

Description

Substitute the expression sub for the name nm in expr by walking the tree.

Usage

```
subexpr(expr, nm, sub)
```

Arguments

expr	an expression
nm	a name for which to substitute
sub	the expression to substitute for name nm

Value

the expression with all occurrences of nm replaced by sub

Note

this function is called recursively

Index