SBML Model Report

Model name: “Rao2014 - Fatty acid beta-oxidation (reduced model)”

May 5, 2016

1 General Overview

This is a document in SBML Level 2 Version 4 format. This model was created by the following two authors: RaoShodhan[1] and JutyNick[2] at February 28th 2014 at 12:50 a. m. Table 1 gives an overview of the quantities of all components of this model.

Table 1: Number of components in this model, which are described in the following sections.

Element	Quantity	Element	Quantity
compartment types	0	compartments	2
species types	0	species	55
events	0	constraints	0
reactions	37	function definitions	48
global parameters	140	unit definitions	2
rules	2	initial assignments	0

Model Notes

```
This represents the reduced version of the {\textquotestraightdblbase}time course model{\
```

[1]University Medical Center, Groningen, shodhanr@gmail.com
[2]EMBL-EBI, juty@ebi.ac.uk

2 Unit Definitions

This is an overview of five unit definitions of which three are predefined by SBML and not mentioned in the model.

2.1 Unit time

Definition 60 s

2.2 Unit substance

Definition µmol

2.3 Unit volume

Notes Litre is the predefined SBML unit for volume.

Definition l

2.4 Unit area

Notes Square metre is the predefined SBML unit for area since SBML Level 2 Version 1.

Definition m^2

2.5 Unit length

Notes Metre is the predefined SBML unit for length since SBML Level 2 Version 1.

Definition m

3 Compartments

This model contains two compartments.

Table 2: Properties of all compartments.

Id	Name	SBO	Spatial Dimensions	Size	Unit	Constant	Outside
VCYT	VCYT		3	0.01	l	☑	
VMAT	VMAT		3	$1.8 \cdot 10^{-6}$	l	☑	

3.1 Compartment VCYT

This is a three dimensional compartment with a constant size of 0.01 litre.

Name VCYT

3.2 Compartment VMAT

This is a three dimensional compartment with a constant size of $1.8 \cdot 10^{-6}$ litre.

Name VMAT

4 Species

This model contains 55 species. The boundary condition of 24 of these species is set to `true` so that these species' amount cannot be changed by any reaction. Section 9 provides further details and the derived rates of change of each species.

Table 3: Properties of each species.

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
C16AcylCarCYT	C16AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C14AcylCarCYT	C14AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C12AcylCarCYT	C12AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C10AcylCarCYT	C10AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C8AcylCarCYT	C8AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C6AcylCarCYT	C6AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C4AcylCarCYT	C4AcylCarCYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☐
C16AcylCoACYT	C16AcylCoACYT	VCYT	$\mu mol \cdot l^{-1}$	☐	☑
CarCYT	CarCYT	VCYT	$\mu mol \cdot l^{-1}$	☑	☑
CoACYT	CoACYT	VCYT	$\mu mol \cdot l^{-1}$	☑	☑
MalCoACYT	MalCoACYT	VCYT	$\mu mol \cdot l^{-1}$	☑	☑
C16AcylCarMAT	C16AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C16AcylCoAMAT	C16AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C16EnoylCoAMAT	C16EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C16HydroxyacylCoAMAT	C16HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C16KetoacylCoAMAT	C16KetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C14AcylCarMAT	C14AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C14AcylCoAMAT	C14AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C14EnoylCoAMAT	C14EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C14HydroxyacylCoAMAT	C14HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C14KetoacylCoAMAT	C14KetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
C12AcylCarMAT	C12AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C12AcylCoAMAT	C12AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C12EnoylCoAMAT	C12EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C12HydroxyacylCoAMAT	C12HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C12KetoacylCoAMAT	C12KetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C10AcylCarMAT	C10AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C10AcylCoAMAT	C10AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C10EnoylCoAMAT	C10EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C10HydroxyacylCoAMAT	C10HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C10KetoacylCoAMAT	C10KetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C8AcylCarMAT	C8AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C8AcylCoAMAT	C8AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C8EnoylCoAMAT	C8EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C8HydroxyacylCoAMAT	C8HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C8KetoacylCoAMAT	C8KetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C6AcylCarMAT	C6AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C6AcylCoAMAT	C6AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C6EnoylCoAMAT	C6EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C6HydroxyacylCoAMAT	C6HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C6KetoacylCoAMAT	C6KetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C4AcylCarMAT	C4AcylCarMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C4AcylCoAMAT	C4AcylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C4EnoylCoAMAT	C4EnoylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
C4HydroxyacylCoAMAT	C4HydroxyacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
AcetylCoAMAT	AcetylCoAMAT	VMAT	$\mu mol \cdot l^{-1}$	☐	☐
FADHMAT	FADHMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑

Id	Name	Compartment	Derived Unit	Constant	Boundary Condition
NADHMAT	NADHMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
CoAMAT	CoAMAT	VMAT	$\mu mol \cdot l^{-1}$	⊟	☑
CarMAT	CarMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
FADtMAT	FADtMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
NADtMAT	NADtMAT	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
CoAMATt	CoAMATt	VMAT	$\mu mol \cdot l^{-1}$	☑	☑
species_1	NAD	VMAT	$\mu mol \cdot l^{-1}$	☑	☑

5 Parameters

This model contains 140 global parameters.

Table 4: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
Vfcact	Vfcact		0.420		☑
Vrcact	Vrcact		0.420		☑
KmcactCarMAT	KmcactCarMAT		130.000		☑
KmcactCarCYT	KmcactCarCYT		130.000		☑
KicactCarCYT	KicactCarCYT		200.000		☑
Keqcact	Keqcact		1.000		☑
Vcpt2	Vcpt2		0.391		☑
Kmcpt2C16AcylCarMAT	KmCpt2C16AcylCarMAT		51.000		☑
Kmcpt2C14AcylCarMAT	KmCpt2C14AcylCarMAT		51.000		☑
Kmcpt2C12AcylCarMAT	KmCpt2C12AcylCarMAT		51.000		☑
Kmcpt2C10AcylCarMAT	KmCpt2C10AcylCarMAT		51.000		☑
Kmcpt2C8AcylCarMAT	KmCpt2C8AcylCarMAT		51.000		☑
Kmcpt2C6AcylCarMAT	KmCpt2C6AcylCarMAT		51.000		☑
Kmcpt2C4AcylCarMAT	KmCpt2C4AcylCarMAT		51.000		☑
Kmcpt2CoAMAT	Kmcpt2CoAMAT		30.000		☑
Kmcpt2C16AcylCoAMAT	KmCpt2C16AcylCoAMAT		38.000		☑
Kmcpt2C14AcylCoAMAT	KmCpt2C14AcylCoAMAT		38.000		☑
Kmcpt2C12AcylCoAMAT	KmCpt2C12AcylCoAMAT		38.000		☑
Kmcpt2C10AcylCoAMAT	KmCpt2C10AcylCoAMAT		38.000		☑
Kmcpt2C8AcylCoAMAT	KmCpt2C8AcylCoAMAT		38.000		☑
Kmcpt2C6AcylCoAMAT	KmCpt2C6AcylCoAMAT		1000.000		☑
Kmcpt2C4AcylCoAMAT	KmCpt2C4AcylCoAMAT		1000000.000		☑
Kmcpt2CarMAT	Kmcpt2CarMAT		350.000		☑
Keqcpt2	Keqcpt2		2.220		☑
Vvlcad	Vvlcad		0.008		☑
KmvlcadC16AcylCoAMAT	KmvlcadC16AcylCoAMAT		6.500		☑
KmvlcadC14AcylCoAMAT	KmvlcadC14AcylCoAMAT		4.000		☑
KmvlcadC12AcylCoAMAT	KmvlcadC12AcylCoAMAT		2.700		☑
KmvlcadFAD	KmvlcadFAD		0.120		☑
KmvlcadC16EnoylCoAMAT	KmvlcadC16EnoylCoAMAT		1.080		☑
KmvlcadC14EnoylCoAMAT	KmvlcadC14EnoylCoAMAT		1.080		☑
KmvlcadC12EnoylCoAMAT	KmvlcadC12EnoylCoAMAT		1.080		☑
KmvlcadFADH	KmvlcadFADH		24.200		☑
Keqvlcad	Keqvlcad		6.000		☑
Vlcad	Vlcad		0.010		☑
KmlcadC16AcylCoAMAT	KmlcadC16AcylCoAMAT		2.500		☑
KmlcadC14AcylCoAMAT	KmlcadC14AcylCoAMAT		7.400		☑

Id	Name	SBO	Value	Unit	Constant
KmlcadC12AcylCoAMAT	KmlcadC12AcylCoAMAT		9.000		☑
KmlcadC10AcylCoAMAT	KmlcadC10AcylCoAMAT		24.300		☑
KmlcadC8AcylCoAMAT	KmlcadC8AcylCoAMAT		123.000		☑
KmlcadFAD	KmlcadFAD		0.120		☑
KmlcadC16EnoylCoAMAT	KmlcadC16EnoylCoAMAT		1.080		☑
KmlcadC14EnoylCoAMAT	KmlcadC14EnoylCoAMAT		1.080		☑
KmlcadC12EnoylCoAMAT	KmlcadC12EnoylCoAMAT		1.080		☑
KmlcadC10EnoylCoAMAT	KmlcadC10EnoylCoAMAT		1.080		☑
KmlcadC8EnoylCoAMAT	KmlcadC8EnoylCoAMAT		1.080		☑
KmlcadFADH	KmlcadFADH		24.200		☑
Keqlcad	Keqlcad		6.000		☑
Vmcad	Vmcad		0.081		☑
KmmcadC12AcylCoAMAT	KmmcadC12AcylCoAMAT		5.700		☑
KmmcadC10AcylCoAMAT	KmmcadC10AcylCoAMAT		5.400		☑
KmmcadC8AcylCoAMAT	KmmcadC8AcylCoAMAT		4.000		☑
KmmcadC6AcylCoAMAT	KmmcadC6AcylCoAMAT		9.400		☑
KmmcadC4AcylCoAMAT	KmmcadC4AcylCoAMAT		135.000		☑
KmmcadFAD	KmmcadFAD		0.120		☑
KmmcadC12EnoylCoAMAT	KmmcadC12EnoylCoAMAT		1.080		☑
KmmcadC10EnoylCoAMAT	KmmcadC10EnoylCoAMAT		1.080		☑
KmmcadC8EnoylCoAMAT	KmmcadC8EnoylCoAMAT		1.080		☑
KmmcadC6EnoylCoAMAT	KmmcadC6EnoylCoAMAT		1.080		☑
KmmcadC4EnoylCoAMAT	KmmcadC4EnoylCoAMAT		1.080		☑
KmmcadFADH	KmmcadFADH		24.200		☑
Keqmcad	Keqmcad		6.000		☑
Vscad	Vscad		0.081		☑
KmscadC6AcylCoAMAT	KmscadC6AcylCoAMAT		285.000		☑
KmscadC4AcylCoAMAT	KmscadC4AcylCoAMAT		10.700		☑
KmscadFAD	KmscadFAD		0.120		☑
KmscadC6EnoylCoAMAT	KmscadC6EnoylCoAMAT		1.080		☑
KmscadC4EnoylCoAMAT	KmscadC4EnoylCoAMAT		1.080		☑
KmscadFADH	KmscadFADH		24.200		☑
Keqscad	Keqscad		6.000		☑
Vcrot	Vcrot		3.600		☑
KmcrotC16EnoylCoAMAT	KmcrotC16EnoylCoAMAT		150.000		☑
KmcrotC14EnoylCoAMAT	KmcrotC14EnoylCoAMAT		100.000		☑
KmcrotC12EnoylCoAMAT	KmcrotC12EnoylCoAMAT		25.000		☑
KmcrotC10EnoylCoAMAT	KmcrotC10EnoylCoAMAT		25.000		☑
KmcrotC8EnoylCoAMAT	KmcrotC8EnoylCoAMAT		25.000		☑
KmcrotC6EnoylCoAMAT	KmcrotC6EnoylCoAMAT		25.000		☑
KmcrotC4EnoylCoAMAT	KmcrotC4EnoylCoAMAT		40.000		☑
KmcrotC16HydroxyacylCoAMAT	KmcrotC16HydroxyacylCoAMAT		45.000		☑

Id	Name	SBO	Value	Unit	Constant
KmcrotC14HydroxyacylCoAMAT	KmcrotC14HydroxyacylCoAMAT		45.000		☑
KmcrotC12HydroxyacylCoAMAT	KmcrotC12HydroxyacylCoAMAT		45.000		☑
KmcrotC10HydroxyacylCoAMAT	KmcrotC10HydroxyacylCoAMAT		45.000		☑
KmcrotC8HydroxyacylCoAMAT	KmcrotC8HydroxyacylCoAMAT		45.000		☑
KmcrotC6HydroxyacylCoAMAT	KmcrotC6HydroxyacylCoAMAT		45.000		☑
KmcrotC4HydroxyacylCoAMAT	KmcrotC4HydroxyacylCoAMAT		45.000		☑
KicrotC4AcetoacylCoA	KicrotC4AcetoacylCoA		1.600		☑
Keqcrot	Keqcrot		3.130		☑
Vmschad	Vmschad		1.000		☑
KmmschadC16HydroxyacylCoAMAT	KmmschadC16HydroxyacylCoAMAT		1.500		☑
KmmschadC14HydroxyacylCoAMAT	KmmschadC14HydroxyacylCoAMAT		1.800		☑
KmmschadC12HydroxyacylCoAMAT	KmmschadC12HydroxyacylCoAMAT		3.700		☑
KmmschadC10HydroxyacylCoAMAT	KmmschadC10HydroxyacylCoAMAT		8.800		☑
KmmschadC8HydroxyacylCoAMAT	KmmschadC8HydroxyacylCoAMAT		16.300		☑
KmmschadC6HydroxyacylCoAMAT	KmmschadC6HydroxyacylCoAMAT		28.600		☑
KmmschadC4HydroxyacylCoAMAT	KmmschadC4HydroxyacylCoAMAT		39.900		☑
KmmschadNADMAT	KmmschadNADMAT		58.500		☑
KmmschadC16KetoacylCoAMAT	KmmschadC16KetoacylCoAMAT		1.400		☑
KmmschadC14KetoacylCoAMAT	KmmschadC14KetoacylCoAMAT		1.400		☑
KmmschadC12KetoacylCoAMAT	KmmschadC12KetoacylCoAMAT		1.600		☑
KmmschadC10KetoacylCoAMAT	KmmschadC10KetoacylCoAMAT		2.300		☑
KmmschadC8KetoacylCoAMAT	KmmschadC8KetoacylCoAMAT		4.100		☑
KmmschadC6KetoacylCoAMAT	KmmschadC6KetoacylCoAMAT		5.800		☑
KmmschadC4AcetoacylCoAMAT	KmmschadC4AcetoacylCoAMAT		16.900		☑
KmmschadNADHMAT	KmmschadNADHMAT		5.400		☑
Keqmschad	Keqmschad		$2.17 \cdot 10^{-4}$		☑
Vmckat	Vmckat		0.377		☑
KmmckatC16KetoacylCoAMAT	KmmckatC16KetoacylCoAMAT		1.100		☑
KmmckatC14KetoacylCoAMAT	KmmckatC14KetoacylCoAMAT		1.200		☑
KmmckatC12KetoacylCoAMAT	KmmckatC12KetoacylCoAMAT		1.300		☑
KmmckatC10KetoacylCoAMAT	KmmckatC10KetoacylCoAMAT		2.100		☑
KmmckatC8KetoacylCoAMAT	KmmckatC8KetoacylCoAMAT		3.200		☑
KmmckatC6KetoacylCoAMAT	KmmckatC6KetoacylCoAMAT		6.700		☑
KmmckatC4AcetoacylCoAMAT	KmmckatC4AcetoacylCoAMAT		12.400		☑
KmmckatCoAMAT	KmmckatCoAMAT		26.600		☑
KmmckatC14AcylCoAMAT	KmmckatC14AcylCoAMAT		13.830		☑
KmmckatC16AcylCoAMAT	KmmckatC16AcylCoAMAT		13.830		☑
KmmckatC12AcylCoAMAT	KmmckatC12AcylCoAMAT		13.830		☑
KmmckatC10AcylCoAMAT	KmmckatC10AcylCoAMAT		13.830		☑
KmmckatC8AcylCoAMAT	KmmckatC8AcylCoAMAT		13.830		☑
KmmckatC6AcylCoAMAT	KmmckatC6AcylCoAMAT		13.830		☑
KmmckatC4AcylCoAMAT	KmmckatC4AcylCoAMAT		13.830		☑

Id	Name	SBO	Value	Unit	Constant
KmmckatAcetylCoAMAT	KmmckatAcetylCoAMAT		30.000		☑
Keqmckat	Keqmckat		1051.000		☑
Vmtp	Vmtp		2.840		☑
KmmtpC16EnoylCoAMAT	KmmtpC16EnoylCoAMAT		25.000		☑
KmmtpC14EnoylCoAMAT	KmmtpC14EnoylCoAMAT		25.000		☑
KmmtpC12EnoylCoAMAT	KmmtpC12EnoylCoAMAT		25.000		☑
KmmtpC10EnoylCoAMAT	KmmtpC10EnoylCoAMAT		25.000		☑
KmmtpC8EnoylCoAMAT	KmmtpC8EnoylCoAMAT		25.000		☑
KmmtpNADMAT	KmmtpNADMAT		60.000		☑
KmmtpCoAMAT	KmmtpCoAMAT		30.000		☑
KmmtpC14AcylCoAMAT	KmmtpC14AcylCoAMAT		13.830		☑
KmmtpC16AcylCoAMAT	KmmtpC16AcylCoAMAT		13.830		☑
KmmtpC12AcylCoAMAT	KmmtpC12AcylCoAMAT		13.830		☑
KmmtpC10AcylCoAMAT	KmmtpC10AcylCoAMAT		13.830		☑
KmmtpC8AcylCoAMAT	KmmtpC8AcylCoAMAT		13.830		☑
KmmtpC6AcylCoAMAT	KmmtpC6AcylCoAMAT		13.830		☑
KmmtpNADHMAT	KmmtpNADHMAT		50.000		☑
KmmtpAcetylCoAMAT	KmmtpAcetylCoAMAT		30.000		☑
Keqmtp	Keqmtp		0.710		☑

6 Function definitions

This is an overview of 48 function definitions.

6.1 Function definition MTP

Name MTP_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kms5, Kms7, Kms8, Kmp1, Kmp2, Kmp3, Kmp4, Kmp5, Kmp6, Kmp7, Kmp8, Ki1, Keq, S1, S2, S3, S4, S5, S7, S8, P1, P2, P3, P4, P5, P6, P7, P8, I1

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot \left(\frac{\mathrm{S1}\cdot(\mathrm{S7}-\mathrm{P7})\cdot \mathrm{S8}}{\mathrm{Kms1}\cdot \mathrm{Kms7}\cdot \mathrm{Kms8}}-\frac{\mathrm{P1}\cdot \mathrm{P7}\cdot \mathrm{P8}}{\mathrm{Kms1}\cdot \mathrm{Kms7}\cdot \mathrm{Kms8}\cdot \mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}+\frac{\mathrm{S4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}+\frac{\mathrm{S5}}{\mathrm{Kms5}}+\frac{\mathrm{P5}}{\mathrm{Kmp5}}+\frac{\mathrm{P6}}{\mathrm{Kmp6}}+\frac{\mathrm{I1}}{\mathrm{Ki1}}\right)\cdot \left(1+\frac{\mathrm{S7}-\mathrm{P7}}{\mathrm{Kms7}}+ \right.} \quad (1)$$

6.2 Function definition MCKATB

Name MCKATB_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kms5, Kms6, Kms7, Kms8, Kmp1, Kmp2, Kmp3, Kmp4, Kmp5, Kmp6, Kmp7, Kmp8, Keq, S1, S2, S3, S4, S5, S6, S7, S8, P1, P2, P3, P4, P5, P6, P7, P8

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot \left(\frac{\mathrm{S1}\cdot \mathrm{S8}}{\mathrm{Kms1}\cdot \mathrm{Kms8}}-\frac{\mathrm{P8}\cdot \mathrm{P8}}{\mathrm{Kms1}\cdot \mathrm{Kms8}\cdot \mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}+\frac{\mathrm{S4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}+\frac{\mathrm{S5}}{\mathrm{Kms5}}+\frac{\mathrm{P5}}{\mathrm{Kmp5}}+\frac{\mathrm{S6}}{\mathrm{Kms6}}+\frac{\mathrm{P6}}{\mathrm{Kmp6}}+\frac{\mathrm{S7}}{\mathrm{Kms7}}+\frac{\mathrm{P7}}{\mathrm{Kmp}} \tag{2}$$

6.3 Function definition MCKATA

Name MCKATA_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kms5, Kms6, Kms7, Kms8, Kmp1, Kmp2, Kmp3, Kmp4, Kmp5, Kmp6, Kmp7, Kmp8, Keq, S1, S2, S3, S4, S5, S6, S7, S8, P1, P2, P3, P4, P5, P6, P7, P8

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot \left(\frac{\mathrm{S1}\cdot \mathrm{S8}}{\mathrm{Kms1}\cdot \mathrm{Kms8}}-\frac{\mathrm{P1}\cdot \mathrm{P8}}{\mathrm{Kms1}\cdot \mathrm{Kms8}\cdot \mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}+\frac{\mathrm{S4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}+\frac{\mathrm{S5}}{\mathrm{Kms5}}+\frac{\mathrm{P5}}{\mathrm{Kmp5}}+\frac{\mathrm{S6}}{\mathrm{Kms6}}+\frac{\mathrm{P6}}{\mathrm{Kmp6}}+\frac{\mathrm{S7}}{\mathrm{Kms7}}+\frac{\mathrm{P7}}{\mathrm{Kmp}} \tag{3}$$

6.4 Function definition RES

Name RES_2

Arguments Ks, S, K1

Mathematical Expression

$$\mathrm{Ks}\cdot (\mathrm{S}-\mathrm{K1}) \tag{4}$$

6.5 Function definition SCAD

Name SCAD_2

Arguments sf, V, Kms1, Kms2, Kms3, Kmp1, Kmp2, Kmp3, Keq, S1, S2, S3, P1, P2, P3

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot \left(\frac{\mathrm{S1}\cdot (\mathrm{S3}-\mathrm{P3})}{\mathrm{Kms1}\cdot \mathrm{Kms3}}-\frac{\mathrm{P1}\cdot \mathrm{P3}}{\mathrm{Kms1}\cdot \mathrm{Kms3}\cdot \mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}\right)\cdot \left(1+\frac{\mathrm{S3}-\mathrm{P3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}\right)} \tag{5}$$

6.6 Function definition LCAD

Name LCAD_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kms5, Kms6, Kmp1, Kmp2, Kmp3, Kmp4, Kmp5, Kmp6, Keq, S1, S2, S3, S4, S5, S6, P1, P2, P3, P4, P5, P6

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot\left(\frac{\mathrm{S1}\cdot(\mathrm{S6}-\mathrm{P6})}{\mathrm{Kms1}\cdot\mathrm{Kms6}}-\frac{\mathrm{P1}\cdot\mathrm{P6}}{\mathrm{Kms1}\cdot\mathrm{Kms6}\cdot\mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}+\frac{\mathrm{S4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}+\frac{\mathrm{S5}}{\mathrm{Kms5}}+\frac{\mathrm{P5}}{\mathrm{Kmp5}}\right)\cdot\left(1+\frac{\mathrm{S6}-\mathrm{P6}}{\mathrm{Kms6}}+\frac{\mathrm{P6}}{\mathrm{Kmp6}}\right)} \tag{6}$$

6.7 Function definition CPT1

Name CPT1_2

Arguments sf, V, Kms1, Kms2, Kmp1, Kmp2, Ki1, Keq, S1, S2, P1, P2, I1, n

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot\left(\frac{\mathrm{S1}\cdot\mathrm{S2}}{\mathrm{Kms1}\cdot\mathrm{Kms2}}-\frac{\mathrm{P1}\cdot\mathrm{P2}}{\mathrm{Kms1}\cdot\mathrm{Kms2}\cdot\mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\left(\frac{\mathrm{I1}}{\mathrm{Ki1}}\right)^{\mathrm{n}}\right)\cdot\left(1+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}\right)} \tag{7}$$

6.8 Function definition VLCAD

Name VLCAD_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kmp1, Kmp2, Kmp3, Kmp4, Keq, S1, S2, S3, S4, P1, P2, P3, P4

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot\left(\frac{\mathrm{S1}\cdot(\mathrm{S4}-\mathrm{P4})}{\mathrm{Kms1}\cdot\mathrm{Kms4}}-\frac{\mathrm{P1}\cdot\mathrm{P4}}{\mathrm{Kms1}\cdot\mathrm{Kms4}\cdot\mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}\right)\cdot\left(1+\frac{\mathrm{S4}-\mathrm{P4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}\right)} \tag{8}$$

6.9 Function definition CPT2

Name CPT2_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kms5, Kms6, Kms7, Kms8, Kmp1, Kmp2, Kmp3, Kmp4, Kmp5, Kmp6, Kmp7, Kmp8, Keq, S1, S2, S3, S4, S5, S6, S7, S8, P1, P2, P3, P4, P5, P6, P7, P8

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot \left(\frac{\mathrm{S1}\cdot \mathrm{S8}}{\mathrm{Kms1}\cdot \mathrm{Kms8}}-\frac{\mathrm{P1}\cdot \mathrm{P8}}{\mathrm{Kms1}\cdot \mathrm{Kms8}\cdot \mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}+\frac{\mathrm{S4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}+\frac{\mathrm{S5}}{\mathrm{Kms5}}+\frac{\mathrm{P5}}{\mathrm{Kmp5}}+\frac{\mathrm{S6}}{\mathrm{Kms6}}+\frac{\mathrm{P6}}{\mathrm{Kmp6}}+\frac{\mathrm{S7}}{\mathrm{Kms7}}+\frac{\mathrm{P7}}{\mathrm{Kmp}} \tag{9}$$

6.10 Function definition MCAD

Name MCAD_2

Arguments sf, V, Kms1, Kms2, Kms3, Kms4, Kms5, Kms6, Kmp1, Kmp2, Kmp3, Kmp4, Kmp5, Kmp6, Keq, S1, S2, S3, S4, S5, S6, P1, P2, P3, P4, P5, P6

Mathematical Expression

$$\frac{\mathrm{sf}\cdot \mathrm{V}\cdot \left(\frac{\mathrm{S1}\cdot (\mathrm{S6}-\mathrm{P6})}{\mathrm{Kms1}\cdot \mathrm{Kms6}}-\frac{\mathrm{P1}\cdot \mathrm{P6}}{\mathrm{Kms1}\cdot \mathrm{Kms6}\cdot \mathrm{Keq}}\right)}{\left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}+\frac{\mathrm{S3}}{\mathrm{Kms3}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}+\frac{\mathrm{S4}}{\mathrm{Kms4}}+\frac{\mathrm{P4}}{\mathrm{Kmp4}}+\frac{\mathrm{S5}}{\mathrm{Kms5}}+\frac{\mathrm{P5}}{\mathrm{Kmp5}}\right)\cdot \left(1+\frac{\mathrm{S6}-\mathrm{P6}}{\mathrm{Kms6}}+\frac{\mathrm{P6}}{\mathrm{Kmp6}}\right)} \tag{10}$$

6.11 Function definition function_4_vcpt1C16_1

Name function_4_vcpt1C16_1

Arguments [C16AcylCarCYT], [C16AcylCoACYT], [CarCYT], [CoACYT], Keqcpt1, Kicpt1MalCoACYT, Kmcpt1C16AcylCarCYT, Kmcpt1C16AcylCoACYT, Kmcpt1CarCYT, Kmcpt1CoACYT, [MalCoACYT], vol (VCYT), Vcpt1, ncpt1, sfcpt1C16

Mathematical Expression

$$\frac{\mathrm{CPT1}\left(\mathrm{sfcpt1C16},\mathrm{Vcpt1},\mathrm{Kmcpt1C16AcylCoACYT},\mathrm{Kmcpt1CarCYT},\mathrm{Kmcpt1C16AcylCarCYT},\mathrm{Kmcpt1CoACYT},\right.}{\mathrm{vol}\,(\mathrm{V} \tag{11}$$

6.12 Function definition function_4_vcactC16_1

Name function_4_vcactC16_1

Arguments [C16AcylCarCYT], [C16AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC16AcylCarCYT, KicactCarCYT, KmcactC16AcylCarCYT, KmcactC16AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\mathrm{Vfcact}\cdot}{[\mathrm{C16AcylCarCYT}]\cdot[\mathrm{CarMAT}]+\mathrm{KmcactCarMAT}\cdot[\mathrm{C16AcylCarCYT}]+\mathrm{KmcactC16AcylCarCYT}\cdot[\mathrm{CarMAT}]\cdot\left(} \tag{12}$$

6.13 Function definition function_4_vcactC14_1

Name function_4_vcactC14_1

Arguments [C14AcylCarCYT], [C14AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC14AcylCarCYT, KicactCarCYT, KmcactC14AcylCarCYT, KmcactC14AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\text{Vfcact} \cdot \left(\right.}{\text{[C14AcylCarCYT]} \cdot \text{[CarMAT]} + \text{KmcactCarMAT} \cdot \text{[C14AcylCarCYT]} + \text{KmcactC14AcylCarCYT} \cdot \text{[CarMAT]} \cdot \left(\right.} \quad (13)$$

6.14 Function definition function_4_vcactC12_1

Name function_4_vcactC12_1

Arguments [C12AcylCarCYT], [C12AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC12AcylCarCYT, KicactCarCYT, KmcactC12AcylCarCYT, KmcactC12AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\text{Vfcact} \cdot \left(\right.}{\text{[C12AcylCarCYT]} \cdot \text{[CarMAT]} + \text{KmcactCarMAT} \cdot \text{[C12AcylCarCYT]} + \text{KmcactC12AcylCarCYT} \cdot \text{[CarMAT]} \cdot \left(\right.} \quad (14)$$

6.15 Function definition function_4_vcactC10_1

Name function_4_vcactC10_1

Arguments [C10AcylCarCYT], [C10AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC10AcylCarCYT, KicactCarCYT, KmcactC10AcylCarCYT, KmcactC10AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\text{Vfcact} \cdot \left(\right.}{\text{[C10AcylCarCYT]} \cdot \text{[CarMAT]} + \text{KmcactCarMAT} \cdot \text{[C10AcylCarCYT]} + \text{KmcactC10AcylCarCYT} \cdot \text{[CarMAT]} \cdot \left(\right.} \quad (15)$$

6.16 Function definition function_4_vcactC8_1

Name function_4_vcactC8_1

Arguments [C8AcylCarCYT], [C8AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC8AcylCarCYT, KicactCarCYT, KmcactC8AcylCarCYT, KmcactC8AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\text{Vfcact} \cdot \left([\text{C}}{[\text{C8AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C8AcylCarCYT}] + \text{KmcactC8AcylCarCYT} \cdot [\text{CarMAT}] \cdot \left(1 + \right.} \quad (16)$$

6.17 Function definition function_4_vcactC6_1

Name function_4_vcactC6_1

Arguments [C6AcylCarCYT], [C6AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC6AcylCarCYT, KicactCarCYT, KmcactC6AcylCarCYT, KmcactC6AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\text{Vfcact} \cdot \left([\text{C}}{[\text{C6AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C6AcylCarCYT}] + \text{KmcactC6AcylCarCYT} \cdot [\text{CarMAT}] \cdot \left(1 + \right.} \quad (17)$$

6.18 Function definition function_4_vcactC4_1

Name function_4_vcactC4_1

Arguments [C4AcylCarCYT], [C4AcylCarMAT], [CarCYT], [CarMAT], Keqcact, KicactC4AcylCarCYT, KicactCarCYT, KmcactC4AcylCarCYT, KmcactC4AcylCarMAT, KmcactCarCYT, KmcactCarMAT, Vfcact, Vrcact

Mathematical Expression

$$\frac{\text{Vfcact} \cdot \left([\text{C}}{[\text{C4AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C4AcylCarCYT}] + \text{KmcactC4AcylCarCYT} \cdot [\text{CarMAT}] \cdot \left(1 + \right.} \quad (18)$$

6.19 Function definition function_4_vcpt2C16_1

Name function_4_vcpt2C16_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCarMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C16

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C16}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C} \right. \tag{19}$$

6.20 Function definition function_4_vcpt2C14_1

Name function_4_vcpt2C14_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C14

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C14}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C} \right. \tag{20}$$

6.21 Function definition function_4_vcpt2C12_1

Name function_4_vcpt2C12_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCarMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C12

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C12}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C}\right) \tag{21}$$

6.22 Function definition function_4_vcpt2C10_1

Name function_4_vcpt2C10_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCarMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C10

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C10}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C}\right) \tag{22}$$

6.23 Function definition function_4_vcpt2C8_1

Name function_4_vcpt2C8_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCarMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C8

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C8}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C12}\right) \tag{23}$$

6.24 Function definition function_4_vcpt2C6_1

Name function_4_vcpt2C6_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCarMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C6

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C6}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C12}\right) \tag{24}$$

6.25 Function definition function_4_vcpt2C4_1

Name function_4_vcpt2C4_1

Arguments [C10AcylCarMAT], [C10AcylCoAMAT], [C12AcylCarMAT], [C12AcylCoAMAT], [C14AcylCarMAT], [C14AcylCoAMAT], [C16AcylCarMAT], [C16AcylCoAMAT], [C4AcylCarMAT], [C4AcylCoAMAT], [C6AcylCarMAT], [C6AcylCoAMAT], [C8AcylCarMAT], [C8AcylCoAMAT], [CarMAT], [CoAMAT], Keqcpt2, Kmcpt2C10AcylCarMAT, Kmcpt2C10AcylCoAMAT, Kmcpt2C12AcylCarMAT, Kmcpt2C12AcylCoAMAT, Kmcpt2C14AcylCarMAT, Kmcpt2C14AcylCoAMAT, Kmcpt2C16AcylCarMAT, Kmcpt2C16AcylCoAMAT, Kmcpt2C4AcylCarMAT, Kmcpt2C4AcylCoAMAT, Kmcpt2C6AcylCarMAT, Kmcpt2C6AcylCoAMAT, Kmcpt2C8AcylCarMAT, Kmcpt2C8AcylCoAMAT, Kmcpt2CarMAT, Kmcpt2CoAMAT, vol (VMAT), Vcpt2, sfcpt2C4

Mathematical Expression

$$\mathrm{CPT2}\left(\mathrm{sfcpt2C4}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C12}\right) \tag{25}$$

6.26 Function definition function_4_vvlcadC16_1

Name function_4_vvlcadC16_1

Arguments [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqvlcad, KmvlcadC12AcylCoAMAT, KmvlcadC12EnoylCoAMAT, KmvlcadC14AcylCoAMAT, KmvlcadC14EnoylCoAMAT, KmvlcadC16AcylCoAMAT, KmvlcadC16EnoylCoAMAT, KmvlcadFAD, KmvlcadFADH, vol (VMAT), Vvlcad, sfvlcadC16

Mathematical Expression

$$\mathrm{VLCAD}\left(\mathrm{sfvlcadC16}, \mathrm{Vvlcad}, \mathrm{KmvlcadC16AcylCoAMAT}, \mathrm{KmvlcadC14AcylCoAMAT}, \mathrm{KmvlcadC12AcylCoAMAT}\right) \tag{26}$$

6.27 Function definition function_4_vvlcadC14_1

Name function_4_vvlcadC14_1

Arguments [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqvlcad, KmvlcadC12AcylCoAMAT KmvlcadC12EnoylCoAMAT, KmvlcadC14AcylCoAMAT, KmvlcadC14EnoylCoAMAT, KmvlcadC16AcylCoAMAT, KmvlcadC16EnoylCoAMAT, KmvlcadFAD, KmvlcadFADH, vol (VMAT), Vvlcad, sfvlcadC14

Mathematical Expression

$$\mathrm{VLCAD}\left(\mathrm{sfvlcadC14}, \mathrm{Vvlcad}, \mathrm{KmvlcadC14AcylCoAMAT}, \mathrm{KmvlcadC16AcylCoAMAT}, \mathrm{KmvlcadC12AcylCoAMAT} \right. \tag{27}$$

6.28 Function definition function_4_vvlcadC12_1

Name function_4_vvlcadC12_1

Arguments [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqvlcad, KmvlcadC12AcylCoAMAT KmvlcadC12EnoylCoAMAT, KmvlcadC14AcylCoAMAT, KmvlcadC14EnoylCoAMAT, KmvlcadC16AcylCoAMAT, KmvlcadC16EnoylCoAMAT, KmvlcadFAD, KmvlcadFADH, vol (VMAT), Vvlcad, sfvlcadC12

Mathematical Expression

$$\mathrm{VLCAD}\left(\mathrm{sfvlcadC12}, \mathrm{Vvlcad}, \mathrm{KmvlcadC12AcylCoAMAT}, \mathrm{KmvlcadC16AcylCoAMAT}, \mathrm{KmvlcadC14AcylCoAMAT} \right. \tag{28}$$

6.29 Function definition function_4_vlcadC16_1

Name function_4_vlcadC16_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqlcad, KmlcadC10AcylCoAMAT, KmlcadC10EnoylCoAMAT, KmlcadC12AcylCoAMAT, KmlcadC12EnoylCoAMAT, KmlcadC14AcylCoAM KmlcadC14EnoylCoAMAT, KmlcadC16AcylCoAMAT, KmlcadC16EnoylCoAMAT, KmlcadC8AcylCoAMA KmlcadC8EnoylCoAMAT, KmlcadFAD, KmlcadFADH, vol (VMAT), Vlcad, sflcadC16

Mathematical Expression

$$\mathrm{LCAD}\left(\mathrm{sflcadC16}, \mathrm{Vlcad}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{Kmlca} \right. \tag{29}$$

6.30 Function definition function_4_vlcadC14_1

Name function_4_vlcadC14_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqlcad, KmlcadC10AcylCoAMAT, KmlcadC10EnoylCoAMAT, KmlcadC12AcylCoAMAT, KmlcadC12EnoylCoAMAT, KmlcadC14AcylCoAM KmlcadC14EnoylCoAMAT, KmlcadC16AcylCoAMAT, KmlcadC16EnoylCoAMAT, KmlcadC8AcylCoAMA KmlcadC8EnoylCoAMAT, KmlcadFAD, KmlcadFADH, vol (VMAT), Vlcad, sflcadC14

Mathematical Expression

$$\mathrm{LCAD}(\mathrm{sflcadC14}, \mathrm{Vlcad}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{Kmlca} \tag{30}$$

6.31 Function definition function_4_vlcadC12_1

Name function_4_vlcadC12_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqlcad, KmlcadC10AcylCoAMAT, KmlcadC10EnoylCoAMAT, KmlcadC12AcylCoAMAT, KmlcadC12EnoylCoAMAT, KmlcadC14AcylCoAMAT, KmlcadC14EnoylCoAM KmlcadC16AcylCoAMAT, KmlcadC16EnoylCoAMAT, KmlcadC8AcylCoAMAT, KmlcadC8EnoylCoAMA KmlcadFAD, KmlcadFADH, vol (VMAT), Vlcad, sflcadC12

Mathematical Expression

$$\mathrm{LCAD}(\mathrm{sflcadC12}, \mathrm{Vlcad}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{Kmlca} \tag{31}$$

6.32 Function definition function_4_vlcadC10_1

Name function_4_vlcadC10_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqlcad, KmlcadC10AcylCoAMAT, KmlcadC10EnoylCoAMAT, KmlcadC12AcylCoAMAT, KmlcadC12EnoylCoAMAT, KmlcadC14AcylCoAM KmlcadC14EnoylCoAMAT, KmlcadC16AcylCoAMAT, KmlcadC16EnoylCoAMAT, KmlcadC8AcylCoAMA KmlcadC8EnoylCoAMAT, KmlcadFAD, KmlcadFADH, vol (VMAT), Vlcad, sflcadC10

Mathematical Expression

$$\mathrm{LCAD}(\mathrm{sflcadC10}, \mathrm{Vlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{Kmlca} \tag{32}$$

6.33 Function definition function_4_vmcadC12_1

Name function_4_vmcadC12_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C4AcylCoAMAT], [C4EnoylCoAMAT], [C6AcylCoAMAT], [C6EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqmcad, KmmcadC10AcylCoAMAT, KmmcadC10EnoylCoAMAT, KmmcadC12AcylCoAMAT, KmmcadC12EnoylCoAMAT, KmmcadC4AcylCoAMAT, KmmcadC4EnoylCoAMAT, KmmcadC6AcylCoAMAT, KmmcadC6EnoylCoAM KmmcadC8AcylCoAMAT, KmmcadC8EnoylCoAMAT, KmmcadFAD, KmmcadFADH, vol (VMAT), Vmcad, sfmcadC12

Mathematical Expression

$$\mathrm{MCAD}(\mathrm{sfmcadC12}, \mathrm{Vmcad}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \quad (33)$$

6.34 Function definition function_4_vmcadC10_1

Name function_4_vmcadC10_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C4AcylCoAMAT], [C4EnoylCoAMAT], [C6AcylCoAMAT], [C6EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqmcad, KmmcadC10AcylCoAMAT, KmmcadC10EnoylCoAMAT, KmmcadC12AcylCoAMAT, KmmcadC12EnoylCoAMAT, KmmcadC4AcylCoAMAT, KmmcadC4EnoylCoAMAT, KmmcadC6AcylCoAMAT, KmmcadC6EnoylCoAM KmmcadC8AcylCoAMAT, KmmcadC8EnoylCoAMAT, KmmcadFAD, KmmcadFADH, vol (VMAT), Vmcad, sfmcadC10

Mathematical Expression

$$\mathrm{MCAD}(\mathrm{sfmcadC10}, \mathrm{Vmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \quad (34)$$

6.35 Function definition function_4_vmcadC8_1

Name function_4_vmcadC8_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C4AcylCoAMAT], [C4EnoylCoAMAT], [C6AcylCoAMAT], [C6EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqmcad, KmmcadC10AcylCoAMAT, KmmcadC10EnoylCoAMAT, KmmcadC12AcylCoAMAT, KmmcadC12EnoylCoAMAT, KmmcadC4AcylCoAMAT, KmmcadC4EnoylCoAMAT, KmmcadC6AcylCoAMAT, KmmcadC6EnoylCoAM KmmcadC8AcylCoAMAT, KmmcadC8EnoylCoAMAT, KmmcadFAD, KmmcadFADH, vol (VMAT), Vmcad, sfmcadC8

Mathematical Expression

$$\mathrm{MCAD}(\mathrm{sfmcadC8}, \mathrm{Vmcad}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{K} \tag{35}$$

6.36 Function definition function_4_vmcadC6_1

Name function_4_vmcadC6_1

Arguments [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C4AcylCoAMAT], [C4EnoylCoAMAT], [C6AcylCoAMAT], [C6EnoylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqmcad, KmmcadC10AcylCoAMAT, KmmcadC10EnoylCoAMAT, KmmcadC12AcylCoAMAT, KmmcadC12EnoylCoAMAT, KmmcadC4AcylCoAMAT, KmmcadC4EnoylCoAMAT, KmmcadC6AcylCoAMAT, KmmcadC6EnoylCoAM KmmcadC8AcylCoAMAT, KmmcadC8EnoylCoAMAT, KmmcadFAD, KmmcadFADH, vol(VMAT), Vmcad, sfmcadC6

Mathematical Expression

$$\mathrm{MCAD}(\mathrm{sfmcadC6}, \mathrm{Vmcad}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{K} \tag{36}$$

6.37 Function definition function_4_vscadC4_1

Name function_4_vscadC4_1

Arguments [C4AcylCoAMAT], [C4EnoylCoAMAT], [C6AcylCoAMAT], [C6EnoylCoAMAT], [FADHMAT], [FADtMAT], Keqscad, KmscadC4AcylCoAMAT, KmscadC4EnoylCoAMAT, KmscadC6AcylCoAMAT, KmscadC6EnoylCoAMAT, KmscadFAD, KmscadFADH, vol(VMAT), Vscad, sfscadC4

Mathematical Expression

$$\mathrm{SCAD}(\mathrm{sfscadC4}, \mathrm{Vscad}, \mathrm{KmscadC4AcylCoAMAT}, \mathrm{KmscadC6AcylCoAMAT}, \mathrm{KmscadFAD}, \mathrm{KmscadC4EnoylCoA} \tag{37}$$

6.38 Function definition function_4_vmckatC6_1

Name function_4_vmckatC6_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10KetoacylCoAMAT], [C12AcylCoAMAT], [C12KetoacylCoAMAT], [C14AcylCoAMAT], [C14KetoacylCoAMAT], [C16AcylCoAMAT], [C16KetoacylCoAMAT], [C4AcetoacylCoAMAT], [C4AcylCoAMAT], [C6AcylCoAMAT], [C6KetoacylCoAMAT], [C8AcylCoAMAT], [C8KetoacylCoAMAT], [CoAMAT], Keqmckat, KmmckatAcetylCoAMAT, KmmckatC10AcylCoAMAT, KmmckatC10KetoacylCoAMAT, KmmckatC12AcylCoAMAT, KmmckatC12KetoacylCoAMAT, KmmckatC14AcylCoAMAT,

KmmckatC14KetoacylCoAMAT, KmmckatC16AcylCoAMAT, KmmckatC16KetoacylCoAMAT, KmmckatC4AcetoacylCoAMAT, KmmckatC4AcylCoAMAT, KmmckatC6AcylCoAMAT, KmmckatC6KetoacylCoAMAT, KmmckatC8AcylCoAMAT, KmmckatC8KetoacylCoAMAT, KmmckatCoAMAT, vol (VMAT), Vmckat, sfmckatC6

Mathematical Expression

$$\mathrm{MCKATA}\left(\mathrm{sfmckatC6}, \mathrm{Vmckat}, \mathrm{KmmckatC6KetoacylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC14Ke}\right) \tag{38}$$

6.39 Function definition function_4_vmckatC4_1

Name function_4_vmckatC4_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10KetoacylCoAMAT], [C12AcylCoAMAT], [C12KetoacylCoAMAT], [C14AcylCoAMAT], [C14KetoacylCoAMAT], [C16AcylCoAMAT], [C16KetoacylCoAMAT], [C4AcetoacylCoAMAT], [C4AcylCoAMAT], [C6AcylCoAMAT], [C6KetoacylCoAMAT], [C8AcylCoAMAT], [C8KetoacylCoAMAT], [CoAMAT], Keqmckat, KmmckatAcetylCoAMAT, KmmckatC10AcylCoAMAT, KmmckatC10KetoacylCoAMAT, KmmckatC12AcylCoAMAT, KmmckatC12KetoacylCoAMAT, KmmckatC14AcylCoAMAT, KmmckatC14KetoacylCoAMAT, KmmckatC16AcylCoAMAT, KmmckatC16KetoacylCoAMAT, KmmckatC4AcetoacylCoAMAT, KmmckatC4AcylCoAMAT, KmmckatC6AcylCoAMAT, KmmckatC6KetoacylCoAMAT, KmmckatC8AcylCoAMAT, KmmckatC8KetoacylCoAMAT, KmmckatCoAMAT, vol (VMAT), Vmckat, sfmckatC4

Mathematical Expression

$$\mathrm{MCKATB}\left(\mathrm{sfmckatC4}, \mathrm{Vmckat}, \mathrm{KmmckatC4AcetoacylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC14K}\right) \tag{39}$$

6.40 Function definition function_4_vmtpC16_1

Name function_4_vmtpC16_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C4AcetoacylCoAMAT], [C6AcylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [CoAMAT], Keqmtp, KicrotC4AcetoacylCoA, KmmtpAcetylCoAMAT, KmmtpC10AcylCoAMAT, KmmtpC10EnoylCoAMAT, KmmtpC12AcylCoAMAT, KmmtpC12EnoylCoAMA KmmtpC14AcylCoAMAT, KmmtpC14EnoylCoAMAT, KmmtpC16AcylCoAMAT, KmmtpC16EnoylCoAMA KmmtpC6AcylCoAMAT, KmmtpC8AcylCoAMAT, KmmtpC8EnoylCoAMAT, KmmtpCoAMAT, KmmtpNADHMAT, KmmtpNADMAT, [NADHMAT], [NADtMAT], vol (VMAT), Vmtp, sfmtpC16

Mathematical Expression

$$\mathrm{MTP}\left(\mathrm{sfmtpC16}, \mathrm{Vmtp}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{Kmm}\right) \tag{40}$$

6.41 Function definition function_4_vmtpC14_1

Name function_4_vmtpC14_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C4AcetoacylCoAMAT], [C6AcylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [CoAMAT], Keqmtp, KicrotC4AcetoacylCoA, KmmtpAcetylCoAMAT, KmmtpC10AcylCoAMAT, KmmtpC10EnoylCoAMAT, KmmtpC12AcylCoAMAT, KmmtpC12EnoylCoAMA KmmtpC14AcylCoAMAT, KmmtpC14EnoylCoAMAT, KmmtpC16AcylCoAMAT, KmmtpC16EnoylCoAMA KmmtpC6AcylCoAMAT, KmmtpC8AcylCoAMAT, KmmtpC8EnoylCoAMAT, KmmtpCoAMAT, KmmtpNADHMAT, KmmtpNADMAT, [NADHMAT], [NADtMAT], vol (VMAT), Vmtp, sfmtpC14

Mathematical Expression

$$\mathrm{MTP}(\mathrm{sfmtpC14}, \mathrm{Vmtp}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{Kmm} \tag{41}$$

6.42 Function definition function_4_vmtpC12_1

Name function_4_vmtpC12_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C4AcetoacylCoAMAT], [C6AcylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [CoAMAT], Keqmtp, KicrotC4AcetoacylCoA, KmmtpAcetylCoAMAT, KmmtpC10AcylCoAMAT, KmmtpC10EnoylCoAMAT, KmmtpC12AcylCoAMAT, KmmtpC12EnoylCoAMA KmmtpC14AcylCoAMAT, KmmtpC14EnoylCoAMAT, KmmtpC16AcylCoAMAT, KmmtpC16EnoylCoAMA KmmtpC6AcylCoAMAT, KmmtpC8AcylCoAMAT, KmmtpC8EnoylCoAMAT, KmmtpCoAMAT, KmmtpNADHMAT, KmmtpNADMAT, [NADHMAT], [NADtMAT], vol (VMAT), Vmtp, sfmtpC12

Mathematical Expression

$$\mathrm{MTP}(\mathrm{sfmtpC12}, \mathrm{Vmtp}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{Kmm} \tag{42}$$

6.43 Function definition function_4_vmtpC10_1

Name function_4_vmtpC10_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT], [C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT], [C16EnoylCoAMAT], [C4AcetoacylCoAMAT], [C6AcylCoAMAT], [C8AcylCoAMAT], [C8EnoylCoAMAT], [CoAMAT], Keqmtp, KicrotC4AcetoacylCoA, KmmtpAcetylCoAMAT, KmmtpC10AcylCoAMAT, KmmtpC10EnoylCoAMAT, KmmtpC12AcylCoAMAT, KmmtpC12EnoylCoAMA

KmmtpC14AcylCoAMAT, KmmtpC14EnoylCoAMAT, KmmtpC16AcylCoAMAT, KmmtpC16EnoylCoAMA
KmmtpC6AcylCoAMAT, KmmtpC8AcylCoAMAT, KmmtpC8EnoylCoAMAT, KmmtpCoAMAT,
KmmtpNADHMAT, KmmtpNADMAT, [NADHMAT], [NADtMAT], vol (VMAT), Vmtp,
sfmtpC10

Mathematical Expression

$$\mathrm{MTP}\left(\mathrm{sfmtpC10}, \mathrm{Vmtp}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{Kmm}\right) \tag{43}$$

6.44 Function definition function_4_vmtpC8_1

Name function_4_vmtpC8_1

Arguments [AcetylCoAMAT], [C10AcylCoAMAT], [C10EnoylCoAMAT], [C12AcylCoAMAT],
[C12EnoylCoAMAT], [C14AcylCoAMAT], [C14EnoylCoAMAT], [C16AcylCoAMAT],
[C16EnoylCoAMAT], [C4AcetoacylCoAMAT], [C6AcylCoAMAT], [C8AcylCoAMAT],
[C8EnoylCoAMAT], [CoAMAT], Keqmtp, KicrotC4AcetoacylCoA, KmmtpAcetylCoAMAT,
KmmtpC10AcylCoAMAT, KmmtpC10EnoylCoAMAT, KmmtpC12AcylCoAMAT, KmmtpC12EnoylCoAMA
KmmtpC14AcylCoAMAT, KmmtpC14EnoylCoAMAT, KmmtpC16AcylCoAMAT, KmmtpC16EnoylCoAMA
KmmtpC6AcylCoAMAT, KmmtpC8AcylCoAMAT, KmmtpC8EnoylCoAMAT, KmmtpCoAMAT,
KmmtpNADHMAT, KmmtpNADMAT, [NADHMAT], [NADtMAT], vol (VMAT), Vmtp,
sfmtpC8

Mathematical Expression

$$\mathrm{MTP}\left(\mathrm{sfmtpC8}, \mathrm{Vmtp}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC}\right) \tag{44}$$

6.45 Function definition function_4_vacesink_1

Name function_4_vacesink_1

Arguments [AcetylCoAMAT], K1acesink, Ksacesink, vol (VMAT)

Mathematical Expression

$$\frac{\mathrm{RES}\left(\mathrm{Ksacesink}, [\mathrm{AcetylCoAMAT}], \mathrm{K1acesink}\right)}{\mathrm{vol}\left(\mathrm{VMAT}\right)} \tag{45}$$

6.46 Function definition CRMS

Name CRMS

Arguments sfc, Vc, sfm, Vm, S1, P0, Kms1, Kmms1, Kmp0, P1, P3, Keqc, Keqm, Kmp1, P2,
Kmp2, Kmp3, S2, Kms2, I1, Ki

Mathematical Expression

$$\frac{\mathrm{sfc}\cdot \mathrm{Vc}\cdot \mathrm{sfm}\cdot \mathrm{Vm}\cdot \left(\frac{\mathrm{S1}\cdot \mathrm{P0}}{\mathrm{Kms1}\cdot \mathrm{Kmms1}\cdot \mathrm{Kmp0}}-\frac{\mathrm{P1}\cdot \mathrm{P3}}{\mathrm{Kms1}\cdot \mathrm{Kmms1}\cdot \mathrm{Kmp0}\cdot \mathrm{Keqc}\cdot \mathrm{Keqm}}\right)}{\frac{\mathrm{sfc}\cdot \mathrm{Vc}\cdot \left(1+\frac{\mathrm{P1}}{\mathrm{Kmp1}}+\frac{\mathrm{P2}}{\mathrm{Kmp2}}\right)\cdot \left(1+\frac{\mathrm{P0}}{\mathrm{Kmp0}}+\frac{\mathrm{P3}}{\mathrm{Kmp3}}\right)}{\mathrm{Kms1}\cdot \mathrm{Keqc}}+\frac{\mathrm{sfm}\cdot \mathrm{Vm}\cdot \mathrm{P0}\cdot \left(1+\frac{\mathrm{S1}}{\mathrm{Kms1}}+\frac{\mathrm{S2}}{\mathrm{Kms2}}+\frac{\mathrm{I1}}{\mathrm{Ki}}\right)}{\mathrm{Kmms1}\cdot \mathrm{Kmp0}}} \tag{46}$$

6.47 Function definition CRMS_C6

Name CRMS_C6

Arguments sfcrotC6, Vcrot, sfmschadC6, Vmschad, [C6EnoylCoAMAT], NAD, KmcrotC6EnoylCoAMAT, KmmschadC6HydroxyacylCoAMAT, KmmschadNADMAT, [C6KetoacylCoAMAT], [NADHMAT], Keqcrot, Keqmschad, KmmschadC6KetoacylCoAMAT, [C4AcetoacylCoAMAT], KmmschadC4AcetoacylCo
KmmschadNADHMAT, [C4EnoylCoAMAT], KmcrotC4EnoylCoAMAT, KicrotC4AcetoacylCoA, vol (VMAT)

Mathematical Expression

$$\mathrm{CRMS}\left(\mathrm{sfcrotC6}, \mathrm{Vcrot}, \mathrm{sfmschadC6}, \mathrm{Vmschad}, [\mathrm{C6EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KmmschadC} \right. \tag{47}$$

6.48 Function definition CRMS_C4

Name CRMS_C4

Arguments sfcrotC4, Vcrot, sfmschadC4, Vmschad, [C4EnoylCoAMAT], NAD, KmcrotC4EnoylCoAMAT, KmmschadC4HydroxyacylCoAMAT, KmmschadNADMAT, [C4AcetoacylCoAMAT], [NADHMAT], Keqcrot, Keqmschad, KmmschadC4AcetoacylCoAMAT, [C6KetoacylCoAMAT], KmmschadC6KetoacylCoA
KmmschadNADHMAT, [C6EnoylCoAMAT], KmcrotC6EnoylCoAMAT, KicrotC4AcetoacylCoA, vol (VMAT)

Mathematical Expression

$$\mathrm{CRMS}\left(\mathrm{sfcrotC4}, \mathrm{Vcrot}, \mathrm{sfmschadC4}, \mathrm{Vmschad}, [\mathrm{C4EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KmmschadC} \right. \tag{48}$$

7 Rules

This is an overview of two rules.

7.1 Rule C16AcylCoACYT

Rule C16AcylCoACYT is an assignment rule for species C16AcylCoACYT:

$$\mathrm{C16AcylCoACYT} = 26.8 \cdot 2.71828^{0.18\cdot \mathrm{time}} \tag{49}$$

7.2 Rule CoAMAT

Rule CoAMAT is an assignment rule for species CoAMAT:

$$\begin{aligned}\mathrm{CoAMAT} = [\mathrm{CoAMATt}] - ([\mathrm{C16AcylCoAMAT}] + [\mathrm{C16EnoylCoAMAT}] \\ + [\mathrm{C16HydroxyacylCoAMAT}] + [\mathrm{C16KetoacylCoAMAT}] + [\mathrm{C14AcylCoAMAT}] \\ + [\mathrm{C14EnoylCoAMAT}] + [\mathrm{C14HydroxyacylCoAMAT}] + [\mathrm{C14KetoacylCoAMAT}] \\ + [\mathrm{C12AcylCoAMAT}] + [\mathrm{C12EnoylCoAMAT}] + [\mathrm{C12HydroxyacylCoAMAT}] \\ + [\mathrm{C12KetoacylCoAMAT}] + [\mathrm{C10AcylCoAMAT}] + [\mathrm{C10EnoylCoAMAT}] \\ + [\mathrm{C10HydroxyacylCoAMAT}] + [\mathrm{C10KetoacylCoAMAT}] + [\mathrm{C8AcylCoAMAT}] \\ + [\mathrm{C8EnoylCoAMAT}] + [\mathrm{C8HydroxyacylCoAMAT}] + [\mathrm{C8KetoacylCoAMAT}] \\ + [\mathrm{C6AcylCoAMAT}] + [\mathrm{C6EnoylCoAMAT}] + [\mathrm{C6HydroxyacylCoAMAT}] \\ + [\mathrm{C6KetoacylCoAMAT}] + [\mathrm{C4AcylCoAMAT}] + [\mathrm{C4EnoylCoAMAT}] \\ + [\mathrm{C4HydroxyacylCoAMAT}] + [\mathrm{C4AcetoacylCoAMAT}] + [\mathrm{AcetylCoAMAT}])\end{aligned} \tag{50}$$

Derived unit $\mu\mathrm{mol} \cdot \mathrm{l}^{-1}$

8 Reactions

This model contains 37 reactions. All reactions are listed in the following table and are subsequently described in detail. If a reaction is affected by a modifier, the identifier of this species is written above the reaction arrow.

Table 5: Overview of all reactions

№	Id	Name	Reaction Equation	SBO
1	vcpt1C16	vcpt1C16	$\emptyset \xrightarrow{\text{C16AcylCoACYT, CarCYT, CoACYT, MalCoACYT, C16AcylCarCYT, C16AcylC}}$	
2	vcactC16	vcactC16	$\text{C16AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C16AcylCarCYT, C16AcylCarMAT, CarCYT,}}$	
3	vcactC14	vcactC14	$\text{C14AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C14AcylCarCYT, C14AcylCarMAT, CarCYT,}}$	
4	vcactC12	vcactC12	$\text{C12AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C12AcylCarCYT, C12AcylCarMAT, CarCYT,}}$	
5	vcactC10	vcactC10	$\text{C10AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C10AcylCarCYT, C10AcylCarMAT, CarCYT,}}$	
6	vcactC8	vcactC8	$\text{C8AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C8AcylCarCYT, C8AcylCarMAT, CarCYT, Carl}}$	
7	vcactC6	vcactC6	$\text{C6AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C6AcylCarCYT, C6AcylCarMAT, CarCYT, Carl}}$	
8	vcactC4	vcactC4	$\text{C4AcylCarCYT} \xrightarrow{\text{CarMAT, CarCYT, C4AcylCarCYT, C4AcylCarMAT, CarCYT, Carl}}$	
9	vcpt2C16	vcpt2C16	$\text{C16AcylCarMAT} \xrightarrow{\text{C14AcylCarMAT, C12AcylCarMAT, C10AcylCarMAT, C8AcylCa}}$	
10	vcpt2C14	vcpt2C14	$\text{C14AcylCarMAT} \xrightarrow{\text{C16AcylCarMAT, C12AcylCarMAT, C10AcylCarMAT, C8AcylCa}}$	
11	vcpt2C12	vcpt2C12	$\text{C12AcylCarMAT} \xrightarrow{\text{C16AcylCarMAT, C14AcylCarMAT, C10AcylCarMAT, C8AcylCa}}$	
12	vcpt2C10	vcpt2C10	$\text{C10AcylCarMAT} \xrightarrow{\text{C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C8AcylCa}}$	
13	vcpt2C8	vcpt2C8	$\text{C8AcylCarMAT} \xrightarrow{\text{C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C10AcylCa}}$	
14	vcpt2C6	vcpt2C6	$\text{C6AcylCarMAT} \xrightarrow{\text{C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C10AcylCa}}$	

№	Id	Name	Reaction Equation	SBO
15	vcpt2C4	vcpt2C4	C4AcylCarMAT $\rightleftharpoons$ C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C10AcylCa	
16	vvlcadC16	vvlcadC16	C16AcylCoAMAT + FADHMAT $\rightleftharpoons$ C14AcylCoAMAT, C12AcylCoAMAT, FADtMAT, C14EnoylCoA	
17	vvlcadC14	vvlcadC14	C14AcylCoAMAT + FADHMAT $\rightleftharpoons$ C16AcylCoAMAT, C12AcylCoAMAT, FADtMAT, C16EnoylCoA	
18	vvlcadC12	vvlcadC12	C12AcylCoAMAT + FADHMAT $\rightleftharpoons$ C16AcylCoAMAT, C14AcylCoAMAT, FADtMAT, C16EnoylCoA	
19	vlcadC16	vlcadC16	C16AcylCoAMAT + FADHMAT $\rightleftharpoons$ C14AcylCoAMAT, C12AcylCoAMAT, C10AcylCoAMAT, C8Acy	
20	vlcadC14	vlcadC14	C14AcylCoAMAT + FADHMAT $\rightleftharpoons$ C16AcylCoAMAT, C12AcylCoAMAT, C10AcylCoAMAT, C8Acy	
21	vlcadC12	vlcadC12	C12AcylCoAMAT + FADHMAT $\rightleftharpoons$ C16AcylCoAMAT, C14AcylCoAMAT, C10AcylCoAMAT, C8Acy	
22	vlcadC10	vlcadC10	C10AcylCoAMAT + FADHMAT $\rightleftharpoons$ C16AcylCoAMAT, C14AcylCoAMAT, C12AcylCoAMAT, C8Acy	
23	vmcadC12	vmcadC12	C12AcylCoAMAT + FADHMAT $\rightleftharpoons$ C10AcylCoAMAT, C8AcylCoAMAT, C6AcylCoAMAT, C4AcylC	
24	vmcadC10	vmcadC10	C10AcylCoAMAT + FADHMAT $\rightleftharpoons$ C12AcylCoAMAT, C8AcylCoAMAT, C6AcylCoAMAT, C4AcylC	
25	vmcadC8	vmcadC8	C8AcylCoAMAT + FADHMAT $\rightleftharpoons$ C12AcylCoAMAT, C10AcylCoAMAT, C6AcylCoAMAT, C4AcylC	

№	Id	Name	Reaction Equation	SBO
26	vmcadC6	vmcadC6	$\text{C6AcylCoAMAT} \xrightleftharpoons{\text{C12AcylCoAMAT, C10AcylCoAMAT, C8AcylCoAMAT, C4Acyl}} \text{FADHMAT}$	
27	vscadC4	vscadC4	$\text{C4AcylCoAMAT} \xrightleftharpoons{\text{C6AcylCoAMAT, FADtMAT, C6EnoylCoAMAT, C4AcylCoAMA} } \text{FADHMAT}$	
28	vmckatC6	vmckatC6	$\text{C6KetoacylCoAMAT} \xrightleftharpoons{\text{C16KetoacylCoAMAT, C14KetoacylCoAMAT, C12KetoacylCo}} \text{AcetylCoAMAT}$	
29	vmckatC4	vmckatC4	$\text{C4AcetoacylCoAMAT} \xrightleftharpoons{\text{C16KetoacylCoAMAT, C14KetoacylCoAMAT, C12KetoacylC}}$	
30	vmtpC16	vmtpC16	$\text{C16EnoylCoAMAT} \xrightleftharpoons{\text{C14EnoylCoAMAT, C12EnoylCoAMAT, C10EnoylCoAMAT, C}} \text{AcetylCoAMAT} + \text{NADHMAT}$	
31	vmtpC14	vmtpC14	$\text{C14EnoylCoAMAT} \xrightleftharpoons{\text{C16EnoylCoAMAT, C12EnoylCoAMAT, C10EnoylCoAMAT, C}} \text{AcetylCoAMAT} + \text{NADHMAT}$	
32	vmtpC12	vmtpC12	$\text{C12EnoylCoAMAT} \xrightleftharpoons{\text{C16EnoylCoAMAT, C14EnoylCoAMAT, C10EnoylCoAMAT, C}} \text{AcetylCoAMAT} + \text{NADHMAT}$	
33	vmtpC10	vmtpC10	$\text{C10EnoylCoAMAT} \xrightleftharpoons{\text{C16EnoylCoAMAT, C14EnoylCoAMAT, C12EnoylCoAMAT, C}} \text{AcetylCoAMAT} + \text{NADHMAT}$	
34	vmtpC8	vmtpC8	$\text{C8EnoylCoAMAT} \xrightleftharpoons{\text{C16EnoylCoAMAT, C14EnoylCoAMAT, C12EnoylCoAMAT, C1}} \text{AcetylCoAMAT} + \text{NADHMAT}$	
35	vacesink	vacesink	$\text{AcetylCoAMAT} \xrightleftharpoons{\text{AcetylCoAMAT}} \emptyset$	
36	reaction_1	vcrmsC6	$\text{C6EnoylCoAMAT} + \text{species\_1} \xrightleftharpoons{\text{C4AcetoacylCoAMAT, C4EnoylCoAMAT, C6EnoylCoAMAT, species\_1, C}} \text{NADHMAT}$	

№	Id	Name	Reaction Equation	SBO
37	reaction_2	vcrmsC4	C4EnoylCoAMAT + species_1 $\xrightleftharpoons{\text{C6KetoacylCoAMAT, C6EnoylCoAMAT, C4EnoylCoAMAT, species_1, C4}}$ NADHMAT	

8.1 Reaction vcpt1C16

This is a reversible reaction of no reactant forming one product influenced by nine modifiers.

Name vcpt1C16

Reaction equation

$$\emptyset \xrightleftharpoons{\text{C16AcylCoACYT, CarCYT, CoACYT, MalCoACYT, C16AcylCarCYT, C16AcylCoACYT, CarCYT, CoACYT}} \quad (51)$$

Modifiers

Table 6: Properties of each modifier.

Id	Name	SBO
C16AcylCoACYT	C16AcylCoACYT	
CarCYT	CarCYT	
CoACYT	CoACYT	
MalCoACYT	MalCoACYT	
C16AcylCarCYT	C16AcylCarCYT	
C16AcylCoACYT	C16AcylCoACYT	
CarCYT	CarCYT	
CoACYT	CoACYT	
MalCoACYT	MalCoACYT	

Product

Table 7: Properties of each product.

Id	Name	SBO
C16AcylCarCYT	C16AcylCarCYT	

Kinetic Law

Derived unit contains undeclared units

$$v_1 = \text{vol}(\text{VCYT}) \cdot \text{function\_4\_vcpt1C16\_1}([\text{C16AcylCarCYT}], [\text{C16AcylCoACYT}], [\text{CarCYT}], [\text{CoACYT}], \text{Keqcpt1}, \text{Kicpt1MalCoACYT}, \text{Kmcpt1C16AcylCarCYT}, \text{Kmcpt1C16AcylCoACYT}, \text{Kmcpt1CarCYT}, \text{Kmcpt1CoACYT}, [\text{MalCoACYT}], \text{vol}(\text{VCYT}), \text{Vcpt1}, \text{ncpt1}, \text{sfcpt1C16}) \quad (52)$$

$$\text{function\_4\_vcpt1C16\_1}\left([\text{C16AcylCarCYT}], [\text{C16AcylCoACYT}], [\text{CarCYT}], [\text{CoACYT}], \text{Keqcpt1}, \text{Kicpt1MalCoACYT}, \text{Kmcpt1C16AcylCarCYT}, \text{Kmcpt1C16AcylCoACYT}, \text{Kmcpt1CarCYT}, \text{Kmcpt1CoACYT}, [\text{MalCoACYT}], \text{vol}\left(\text{VCYT}\right), \text{Vcpt1}, \text{ncpt1}, \text{sfcpt1C16}\right) = \frac{\text{CPT1}\left(\text{sfcpt1C16}, \text{Vcpt1}, \text{Kmcpt1C16AcylCoACYT}, \text{Kmcpt1CarCYT}, \text{Kmcpt1C16AcylCarCYT}, \text{Kmcpt1CoACY}\right.}{\text{vol}} \tag{53}$$

$$\text{function\_4\_vcpt1C16\_1}\left([\text{C16AcylCarCYT}], [\text{C16AcylCoACYT}], [\text{CarCYT}], [\text{CoACYT}], \text{Keqcpt1}, \text{Kicpt1MalCoACYT}, \text{Kmcpt1C16AcylCarCYT}, \text{Kmcpt1C16AcylCoACYT}, \text{Kmcpt1CarCYT}, \text{Kmcpt1CoACYT}, [\text{MalCoACYT}], \text{vol}\left(\text{VCYT}\right), \text{Vcpt1}, \text{ncpt1}, \text{sfcpt1C16}\right) = \frac{\text{CPT1}\left(\text{sfcpt1C16}, \text{Vcpt1}, \text{Kmcpt1C16AcylCoACYT}, \text{Kmcpt1CarCYT}, \text{Kmcpt1C16AcylCarCYT}, \text{Kmcpt1CoACY}\right.}{\text{vol}} \tag{54}$$

Table 8: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
`Keqcpt1`	Keqcpt1		0.450		☑
`Kicpt1MalCoACYT`	Kicpt1MalCoACYT		9.100		☑
`Kmcpt1C16AcylCarCYT`	Kmcpt1C16AcylCarCYT		136.000		☑
`Kmcpt1C16AcylCoACYT`	Kmcpt1C16AcylCoACYT		13.800		☑
`Kmcpt1CarCYT`	Kmcpt1CarCYT		125.000		☑
`Kmcpt1CoACYT`	Kmcpt1CoACYT		40.700		☑
`Vcpt1`	Vcpt1		0.012		☑
`ncpt1`	ncpt1		2.480		☑
`sfcpt1C16`	sfcpt1C16		1.000		☑

8.2 Reaction `vcactC16`

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC16

Reaction equation

$$\text{C16AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C16AcylCarCYT, C16AcylCarMAT, CarCYT, CarMAT}} \text{C16AcylCarMAT} \tag{55}$$

Reactant

Table 9: Properties of each reactant.

Id	Name	SBO
C16AcylCarCYT	C16AcylCarCYT	

Modifiers

Table 10: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C16AcylCarCYT	C16AcylCarCYT	
C16AcylCarMAT	C16AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 11: Properties of each product.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_2 = \text{function\_4\_vcactC16\_1}([\text{C16AcylCarCYT}], [\text{C16AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC16AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC16AcylCarCYT}, \text{KmcactC16AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (56)$$

$$\text{function\_4\_vcactC16\_1}([\text{C16AcylCarCYT}], [\text{C16AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC16AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC16AcylCarCYT}, \text{KmcactC16AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (57)$$

$$= \frac{\text{Vfcact}}{[\text{C16AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C16AcylCarCYT}] + \text{KmcactC16AcylCarCYT} \cdot [\text{CarMAT}] \cdot}$$

Table 12: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC16AcylCarCYT	KicactC16AcylCarCYT		56.0		☑
KmcactC16AcylCarCYT	KmcactC16AcylCarCYT		15.0		☑
KmcactC16AcylCarMAT	KmcactC16AcylCarMAT		15.0		☑

8.3 Reaction vcactC14

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC14

Reaction equation

$$\text{C14AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C14AcylCarCYT, C14AcylCarMAT, CarCYT, CarMAT}} \text{C14AcylCarMAT} \tag{58}$$

Reactant

Table 13: Properties of each reactant.

Id	Name	SBO
C14AcylCarCYT	C14AcylCarCYT	

Modifiers

Table 14: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C14AcylCarCYT	C14AcylCarCYT	
C14AcylCarMAT	C14AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 15: Properties of each product.

Id	Name	SBO
C14AcylCarMAT	C14AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_3 = \text{function\_4\_vcactC14\_1}\,([\text{C14AcylCarCYT}], [\text{C14AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC14AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC14AcylCarCYT}, \text{KmcactC14AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \tag{59}$$

$$\text{function\_4\_vcactC14\_1}\,([\text{C14AcylCarCYT}], [\text{C14AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC14AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC14AcylCarCYT}, \text{KmcactC14AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \tag{60}$$

$$= \frac{\text{Vfcact}}{[\text{C14AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C14AcylCarCYT}] + \text{KmcactC14AcylCarCYT} \cdot [\text{CarMAT}] \cdot}$$

Table 16: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC14AcylCarCYT	KicactC14AcylCarCYT		56.0		☑
KmcactC14AcylCarCYT	KmcactC14AcylCarCYT		15.0		☑
KmcactC14AcylCarMAT	KmcactC14AcylCarMAT		15.0		☑

8.4 Reaction vcactC12

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC12

Reaction equation

$$\text{C12AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C12AcylCarCYT, C12AcylCarMAT, CarCYT, CarMAT}} \text{C12AcylCarMAT} \tag{61}$$

Reactant

Table 17: Properties of each reactant.

Id	Name	SBO
C12AcylCarCYT	C12AcylCarCYT	

Modifiers

Table 18: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C12AcylCarCYT	C12AcylCarCYT	
C12AcylCarMAT	C12AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 19: Properties of each product.

Id	Name	SBO
C12AcylCarMAT	C12AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_4 = \text{function\_4\_vcactC12\_1}\,([\text{C12AcylCarCYT}], [\text{C12AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC12AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC12AcylCarCYT}, \text{KmcactC12AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (62)$$

$$\text{function\_4\_vcactC12\_1}\,([\text{C12AcylCarCYT}], [\text{C12AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC12AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC12AcylCarCYT}, \text{KmcactC12AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (63)$$

$$= \frac{\text{Vfcact}}{[\text{C12AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C12AcylCarCYT}] + \text{KmcactC12AcylCarCYT} \cdot [\text{CarMAT}] \cdot}$$

Table 20: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC12AcylCarCYT	KicactC12AcylCarCYT		56.0		☑
KmcactC12AcylCarCYT	KmcactC12AcylCarCYT		15.0		☑
KmcactC12AcylCarMAT	KmcactC12AcylCarMAT		15.0		☑

8.5 Reaction vcactC10

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC10

Reaction equation

$$\text{C10AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C10AcylCarCYT, C10AcylCarMAT, CarCYT, CarMAT}} \text{C10AcylCarMAT} \tag{64}$$

Reactant

Table 21: Properties of each reactant.

Id	Name	SBO
C10AcylCarCYT	C10AcylCarCYT	

Modifiers

Table 22: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C10AcylCarCYT	C10AcylCarCYT	
C10AcylCarMAT	C10AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 23: Properties of each product.

Id	Name	SBO
C10AcylCarMAT	C10AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_5 = \text{function\_4\_vcactC10\_1}\,([\text{C10AcylCarCYT}], [\text{C10AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC10AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC10AcylCarCYT}, \text{KmcactC10AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (65)$$

$$\text{function\_4\_vcactC10\_1}\,([\text{C10AcylCarCYT}], [\text{C10AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC10AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC10AcylCarCYT}, \text{KmcactC10AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (66)$$

$$= \frac{\text{Vfcact}}{[\text{C10AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C10AcylCarCYT}] + \text{KmcactC10AcylCarCYT} \cdot [\text{CarMAT}] \cdot}$$

Table 24: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC10AcylCarCYT	KicactC10AcylCarCYT		56.0		☑
KmcactC10AcylCarCYT	KmcactC10AcylCarCYT		15.0		☑
KmcactC10AcylCarMAT	KmcactC10AcylCarMAT		15.0		☑

8.6 Reaction vcactC8

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC8

Reaction equation

$$\text{C8AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C8AcylCarCYT, C8AcylCarMAT, CarCYT, CarMAT}} \text{C8AcylCarMAT} \quad (67)$$

Reactant

Table 25: Properties of each reactant.

Id	Name	SBO
C8AcylCarCYT	C8AcylCarCYT	

Modifiers

Table 26: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C8AcylCarCYT	C8AcylCarCYT	
C8AcylCarMAT	C8AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 27: Properties of each product.

Id	Name	SBO
C8AcylCarMAT	C8AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_6 = \text{function\_4\_vcactC8\_1}\,([\text{C8AcylCarCYT}], [\text{C8AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC8AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC8AcylCarCYT}, \text{KmcactC8AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (68)$$

$$\text{function\_4\_vcactC8\_1}\,([\text{C8AcylCarCYT}], [\text{C8AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC8AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC8AcylCarCYT}, \text{KmcactC8AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (69)$$

$$= \frac{\text{Vfcact} \cdot \left(}{[\text{C8AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C8AcylCarCYT}] + \text{KmcactC8AcylCarCYT} \cdot [\text{CarMAT}] \cdot \left(1}$$

Table 28: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC8AcylCarCYT	KicactC8AcylCarCYT		56.0		☑
KmcactC8AcylCarCYT	KmcactC8AcylCarCYT		15.0		☑
KmcactC8AcylCarMAT	KmcactC8AcylCarMAT		15.0		☑

8.7 Reaction vcactC6

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC6

Reaction equation

$$\text{C6AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C6AcylCarCYT, C6AcylCarMAT, CarCYT, CarMAT}} \text{C6AcylCarMAT} \tag{70}$$

Reactant

Table 29: Properties of each reactant.

Id	Name	SBO
C6AcylCarCYT	C6AcylCarCYT	

Modifiers

Table 30: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C6AcylCarCYT	C6AcylCarCYT	
C6AcylCarMAT	C6AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 31: Properties of each product.

Id	Name	SBO
C6AcylCarMAT	C6AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_7 = \text{function\_4\_vcactC6\_1}\,([\text{C6AcylCarCYT}], [\text{C6AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC6AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC6AcylCarCYT}, \text{KmcactC6AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (71)$$

$$\text{function\_4\_vcactC6\_1}\,([\text{C6AcylCarCYT}], [\text{C6AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC6AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC6AcylCarCYT}, \text{KmcactC6AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (72)$$

$$= \frac{\text{Vfcact} \cdot \left(}{[\text{C6AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C6AcylCarCYT}] + \text{KmcactC6AcylCarCYT} \cdot [\text{CarMAT}] \cdot \left(1}$$

Table 32: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC6AcylCarCYT	KicactC6AcylCarCYT		56.0		☑
KmcactC6AcylCarCYT	KmcactC6AcylCarCYT		15.0		☑
KmcactC6AcylCarMAT	KmcactC6AcylCarMAT		15.0		☑

8.8 Reaction vcactC4

This is a reversible reaction of one reactant forming one product influenced by six modifiers.

Name vcactC4

Reaction equation

$$\text{C4AcylCarCYT} \xrightleftharpoons{\text{CarMAT, CarCYT, C4AcylCarCYT, C4AcylCarMAT, CarCYT, CarMAT}} \text{C4AcylCarMAT} \quad (73)$$

Reactant

Table 33: Properties of each reactant.

Id	Name	SBO
C4AcylCarCYT	C4AcylCarCYT	

Modifiers

Table 34: Properties of each modifier.

Id	Name	SBO
CarMAT	CarMAT	
CarCYT	CarCYT	
C4AcylCarCYT	C4AcylCarCYT	
C4AcylCarMAT	C4AcylCarMAT	
CarCYT	CarCYT	
CarMAT	CarMAT	

Product

Table 35: Properties of each product.

Id	Name	SBO
C4AcylCarMAT	C4AcylCarMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_8 = \text{function\_4\_vcactC4\_1}\,([\text{C4AcylCarCYT}], [\text{C4AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC4AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC4AcylCarCYT}, \text{KmcactC4AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (74)$$

$$\text{function\_4\_vcactC4\_1}\,([\text{C4AcylCarCYT}], [\text{C4AcylCarMAT}], [\text{CarCYT}], [\text{CarMAT}], \text{Keqcact}, \text{KicactC4AcylCarCYT}, \text{KicactCarCYT}, \text{KmcactC4AcylCarCYT}, \text{KmcactC4AcylCarMAT}, \text{KmcactCarCYT}, \text{KmcactCarMAT}, \text{Vfcact}, \text{Vrcact}) \quad (75)$$

$$= \frac{\text{Vfcact} \cdot \left(}{[\text{C4AcylCarCYT}] \cdot [\text{CarMAT}] + \text{KmcactCarMAT} \cdot [\text{C4AcylCarCYT}] + \text{KmcactC4AcylCarCYT} \cdot [\text{CarMAT}] \cdot \left(1}$$

Table 36: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
KicactC4AcylCarCYT	KicactC4AcylCarCYT		56.0		☑
KmcactC4AcylCarCYT	KmcactC4AcylCarCYT		15.0		☑
KmcactC4AcylCarMAT	KmcactC4AcylCarMAT		15.0		☑

8.9 Reaction vcpt2C16

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C16

Reaction equation

$$\text{C16AcylCarMAT} \overline{\overline{\text{C14AcylCarMAT, C12AcylCarMAT, C10AcylCarMAT, C8AcylCarMAT, C6AcylCarMAT, C4A}}} \quad (76)$$

Reactant

Table 37: Properties of each reactant.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	

Modifiers

Table 38: Properties of each modifier.

Id	Name	SBO
C14AcylCarMAT	C14AcylCarMAT	
C12AcylCarMAT	C12AcylCarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C8AcylCarMAT	C8AcylCarMAT	
C6AcylCarMAT	C6AcylCarMAT	
C4AcylCarMAT	C4AcylCarMAT	
CoAMAT	CoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	

Id	Name	SBO
C4AcylCoAMAT	C4AcylCoAMAT	
CarMAT	CarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 39: Properties of each product.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_9 = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C16\_1}\left([\mathrm{C10AcylCarMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C12AcylCarMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C14AcylCarMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C16AcylCarMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C4AcylCarMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C6AcylCarMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCarMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{CarMAT}], [\mathrm{CoAMAT}], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C16}\right) \tag{77}$$

$$\text{function\_4\_vcpt2C16\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C16}\right) = \text{CPT2}\left(\text{sfcpt2C16}, \text{Vcpt2}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2} \right. \tag{78}$$

$$\text{function\_4\_vcpt2C16\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C16}\right) = \text{CPT2}\left(\text{sfcpt2C16}, \text{Vcpt2}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2} \right. \tag{79}$$

Table 40: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C16	sfcpt2C16		0.85		☑

8.10 Reaction vcpt2C14

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C14

Reaction equation

$$\text{C14AcylCarMAT} \xrightleftharpoons{\text{C16AcylCarMAT, C12AcylCarMAT, C10AcylCarMAT, C8AcylCarMAT, C6AcylCarMAT, C4A} \tag{80}$$

Reactant

Table 41: Properties of each reactant.

Id	Name	SBO
C14AcylCarMAT	C14AcylCarMAT	

Modifiers

Table 42: Properties of each modifier.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	
C12AcylCarMAT	C12AcylCarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C8AcylCarMAT	C8AcylCarMAT	
C6AcylCarMAT	C6AcylCarMAT	
C4AcylCarMAT	C4AcylCarMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
CarMAT	CarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 43: Properties of each product.

Id	Name	SBO
C14AcylCoAMAT	C14AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{10} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C14\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C14}\right) \tag{81}$$

$$\begin{aligned}&\mathrm{function\_4\_vcpt2C14\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C14}\right)\\ &= \frac{\mathrm{CPT2}\left(\mathrm{sfcpt2C14}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt}\right.}{}\end{aligned} \tag{82}$$

$$\text{function\_4\_vcpt2C14\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C14}\right) \tag{83}$$
$$= \text{CPT2}\left(\text{sfcpt2C14}, \text{Vcpt2}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2}\right.$$

Table 44: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C14	sfcpt2C14		1.0		☑

8.11 Reaction vcpt2C12

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C12

Reaction equation

$$\text{C12AcylCarMAT} \rightleftharpoons \text{C16AcylCarMAT, C14AcylCarMAT, C10AcylCarMAT, C8AcylCarMAT, C6AcylCarMAT, C4A} \tag{84}$$

Reactant

Table 45: Properties of each reactant.

Id	Name	SBO
C12AcylCarMAT	C12AcylCarMAT	

Modifiers

Table 46: Properties of each modifier.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	
C14AcylCarMAT	C14AcylCarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C8AcylCarMAT	C8AcylCarMAT	
C6AcylCarMAT	C6AcylCarMAT	
C4AcylCarMAT	C4AcylCarMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
CarMAT	CarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 47: Properties of each product.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{11} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C12\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C12}\right) \tag{85}$$

$$\mathrm{function\_4\_vcpt2C12\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C12}\right) \tag{86}$$
$$= \frac{\mathrm{CPT2}\left(\mathrm{sfcpt2C12}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2}\right.}{}$$

$$\mathrm{function\_4\_vcpt2C12\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C12}\right) \tag{87}$$
$$= \frac{\mathrm{CPT2}\left(\mathrm{sfcpt2C12}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2}\right.}{}$$

Table 48: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C12	sfcpt2C12		0.95		☑

8.12 Reaction vcpt2C10

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C10

Reaction equation

$$\text{C10AcylCarMAT} \rightleftharpoons \text{C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C8AcylCarMAT, C6AcylCarMAT, C4A} \tag{88}$$

Reactant

Table 49: Properties of each reactant.

Id	Name	SBO
C10AcylCarMAT	C10AcylCarMAT	

Modifiers

Table 50: Properties of each modifier.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	
C14AcylCarMAT	C14AcylCarMAT	
C12AcylCarMAT	C12AcylCarMAT	
C8AcylCarMAT	C8AcylCarMAT	
C6AcylCarMAT	C6AcylCarMAT	
C4AcylCarMAT	C4AcylCarMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
CarMAT	CarMAT	

Id	Name	SBO
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 51: Properties of each product.

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{12} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C10\_1}\left([\mathrm{C10AcylCarMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C12AcylCarMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C14AcylCarMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C16AcylCarMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C4AcylCarMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C6AcylCarMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCarMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{CarMAT}], [\mathrm{CoAMAT}], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C10}\right) \quad (89)$$

$$\text{function\_4\_vcpt2C10\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C10}\right) = \underline{\text{CPT2}\left(\text{sfcpt2C10}, \text{Vcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt}\right.} \tag{90}$$

$$\text{function\_4\_vcpt2C10\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C10}\right) = \underline{\text{CPT2}\left(\text{sfcpt2C10}, \text{Vcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt}\right.} \tag{91}$$

Table 52: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C10	sfcpt2C10		0.95		☑

8.13 Reaction vcpt2C8

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C8

Reaction equation

$$\text{C8AcylCarMAT} \underline{\text{C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C10AcylCarMAT, C6AcylCarMAT, C4A}} \tag{92}$$

Reactant

Table 53: Properties of each reactant.

Id	Name	SBO
C8AcylCarMAT	C8AcylCarMAT	

Modifiers

Table 54: Properties of each modifier.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	
C14AcylCarMAT	C14AcylCarMAT	
C12AcylCarMAT	C12AcylCarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C6AcylCarMAT	C6AcylCarMAT	
C4AcylCarMAT	C4AcylCarMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
CarMAT	CarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 55: Properties of each product.

Id	Name	SBO
C8AcylCoAMAT	C8AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{13} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C8\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C8}\right) \tag{93}$$

$$\begin{aligned} &\mathrm{function\_4\_vcpt2C8\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C8}\right) \\ &= \frac{\mathrm{CPT2}\left(\mathrm{sfcpt2C8}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C} \end{aligned} \tag{94}$$

$$\text{function\_4\_vcpt2C8\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C8}\right) \tag{95}$$
$$= \frac{\text{CPT2}\left(\text{sfcpt2C8}, \text{Vcpt2}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C}\right.}{}$$

Table 56: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C8	sfcpt2C8		0.35		☑

8.14 Reaction vcpt2C6

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C6

Reaction equation

$$\text{C6AcylCarMAT} \rightleftharpoons \text{C16AcylCarMAT}, \text{C14AcylCarMAT}, \text{C12AcylCarMAT}, \text{C10AcylCarMAT}, \text{C8AcylCarMAT}, \text{C4A} \tag{96}$$

Reactant

Table 57: Properties of each reactant.

Id	Name	SBO
C6AcylCarMAT	C6AcylCarMAT	

Modifiers

Table 58: Properties of each modifier.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	
C14AcylCarMAT	C14AcylCarMAT	
C12AcylCarMAT	C12AcylCarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C8AcylCarMAT	C8AcylCarMAT	
C4AcylCarMAT	C4AcylCarMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
CarMAT	CarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 59: Properties of each product.

Id	Name	SBO
C6AcylCoAMAT	C6AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{14} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C6\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C6}\right) \tag{97}$$

$$\begin{aligned} &\mathrm{function\_4\_vcpt2C6\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C6}\right) \\ &= \mathrm{CPT2}\left(\mathrm{sfcpt2C6}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C} \end{aligned} \tag{98}$$

$$\begin{aligned} &\mathrm{function\_4\_vcpt2C6\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C6}\right) \\ &= \mathrm{CPT2}\left(\mathrm{sfcpt2C6}, \mathrm{Vcpt2}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C} \end{aligned} \tag{99}$$

Table 60: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C6	sfcpt2C6		0.15		☑

8.15 Reaction vcpt2C4

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vcpt2C4

Reaction equation

C4AcylCarMAT $\rightleftharpoons$ C16AcylCarMAT, C14AcylCarMAT, C12AcylCarMAT, C10AcylCarMAT, C8AcylCarMAT, C6A

(100)

Reactant

Table 61: Properties of each reactant.

Id	Name	SBO
C4AcylCarMAT	C4AcylCarMAT	

Modifiers

Table 62: Properties of each modifier.

Id	Name	SBO
C16AcylCarMAT	C16AcylCarMAT	
C14AcylCarMAT	C14AcylCarMAT	
C12AcylCarMAT	C12AcylCarMAT	
C10AcylCarMAT	C10AcylCarMAT	
C8AcylCarMAT	C8AcylCarMAT	
C6AcylCarMAT	C6AcylCarMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
CarMAT	CarMAT	

Id	Name	SBO
C10AcylCarMAT	C10AcylCarMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C12AcylCarMAT	C12AcylCarMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCarMAT	C14AcylCarMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C16AcylCarMAT	C16AcylCarMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C4AcylCarMAT	C4AcylCarMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCarMAT	C6AcylCarMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCarMAT	C8AcylCarMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
CarMAT	CarMAT	
CoAMAT	CoAMAT	

Product

Table 63: Properties of each product.

Id	Name	SBO
C4AcylCoAMAT	C4AcylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{15} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vcpt2C4\_1}\left(\left[\mathrm{C10AcylCarMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C12AcylCarMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCarMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C16AcylCarMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C4AcylCarMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCarMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCarMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{CarMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqcpt2}, \mathrm{Kmcpt2C10AcylCarMAT}, \mathrm{Kmcpt2C10AcylCoAMAT}, \mathrm{Kmcpt2C12AcylCarMAT}, \mathrm{Kmcpt2C12AcylCoAMAT}, \mathrm{Kmcpt2C14AcylCarMAT}, \mathrm{Kmcpt2C14AcylCoAMAT}, \mathrm{Kmcpt2C16AcylCarMAT}, \mathrm{Kmcpt2C16AcylCoAMAT}, \mathrm{Kmcpt2C4AcylCarMAT}, \mathrm{Kmcpt2C4AcylCoAMAT}, \mathrm{Kmcpt2C6AcylCarMAT}, \mathrm{Kmcpt2C6AcylCoAMAT}, \mathrm{Kmcpt2C8AcylCarMAT}, \mathrm{Kmcpt2C8AcylCoAMAT}, \mathrm{Kmcpt2CarMAT}, \mathrm{Kmcpt2CoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vcpt2}, \mathrm{sfcpt2C4}\right) \tag{101}$$

$$\text{function\_4\_vcpt2C4\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C4}\right) = \underline{\text{CPT2}\left(\text{sfcpt2C4}, \text{Vcpt2}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C} \right.} \tag{102}$$

$$\text{function\_4\_vcpt2C4\_1}\left([\text{C10AcylCarMAT}], [\text{C10AcylCoAMAT}], [\text{C12AcylCarMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCarMAT}], [\text{C14AcylCoAMAT}], [\text{C16AcylCarMAT}], [\text{C16AcylCoAMAT}], [\text{C4AcylCarMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCarMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCarMAT}], [\text{C8AcylCoAMAT}], [\text{CarMAT}], [\text{CoAMAT}], \text{Keqcpt2}, \text{Kmcpt2C10AcylCarMAT}, \text{Kmcpt2C10AcylCoAMAT}, \text{Kmcpt2C12AcylCarMAT}, \text{Kmcpt2C12AcylCoAMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C14AcylCoAMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C16AcylCoAMAT}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C4AcylCoAMAT}, \text{Kmcpt2C6AcylCarMAT}, \text{Kmcpt2C6AcylCoAMAT}, \text{Kmcpt2C8AcylCarMAT}, \text{Kmcpt2C8AcylCoAMAT}, \text{Kmcpt2CarMAT}, \text{Kmcpt2CoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vcpt2}, \text{sfcpt2C4}\right) = \underline{\text{CPT2}\left(\text{sfcpt2C4}, \text{Vcpt2}, \text{Kmcpt2C4AcylCarMAT}, \text{Kmcpt2C16AcylCarMAT}, \text{Kmcpt2C14AcylCarMAT}, \text{Kmcpt2C} \right.} \tag{103}$$

Table 64: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfcpt2C4	sfcpt2C4		0.01		☑

8.16 Reaction vvlcadC16

This is a reversible reaction of one reactant forming two products influenced by 13 modifiers.

Name vvlcadC16

Reaction equation

$$\text{C16AcylCoAMAT} \underline{\text{C14AcylCoAMAT, C12AcylCoAMAT, FADtMAT, C14EnoylCoAMAT, C12EnoylCoAMAT, C}} \tag{104}$$

Reactant

Table 65: Properties of each reactant.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	

Modifiers

Table 66: Properties of each modifier.

Id	Name	SBO
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
FADtMAT	FADtMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 67: Properties of each product.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{16} = \text{vol}(\text{VMAT}) \cdot \text{function\_4\_vvlcadC16\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC16}) \quad (105)$$

$$\text{function\_4\_vvlcadC16\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC16}) \quad (106)$$
$$= \underline{\text{VLCAD}(\text{sfvlcadC16}, \text{Vvlcad}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC12AcylCoAM}}$$

$$\text{function\_4\_vvlcadC16\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC16}) \quad (107)$$
$$= \underline{\text{VLCAD}(\text{sfvlcadC16}, \text{Vvlcad}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC12AcylCoAM}}$$

Table 68: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfvlcadC16	sfvlcadC16		1.0		☑

8.17 Reaction vvlcadC14

This is a reversible reaction of one reactant forming two products influenced by 13 modifiers.

Name vvlcadC14

Reaction equation

C14AcylCoAMAT $\rightleftharpoons$ C16AcylCoAMAT, C12AcylCoAMAT, FADtMAT, C16EnoylCoAMAT, C12EnoylCoAMAT, C

(108)

Reactant

Table 69: Properties of each reactant.

Id	Name	SBO
C14AcylCoAMAT	C14AcylCoAMAT	

Modifiers

Table 70: Properties of each modifier.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
FADtMAT	FADtMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 71: Properties of each product.

Id	Name	SBO
C14EnoylCoAMAT	C14EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{17} = \text{vol}(\text{VMAT}) \cdot \text{function\_4\_vvlcadC14\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC14}) \quad (109)$$

$$\text{function\_4\_vvlcadC14\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC14}) \quad (110)$$

$$= \underline{\text{VLCAD}(\text{sfvlcadC14}, \text{Vvlcad}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC12AcylCoAM}}$$

$$\text{function\_4\_vvlcadC14\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC14}) \quad (111)$$

$$= \underline{\text{VLCAD}(\text{sfvlcadC14}, \text{Vvlcad}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC12AcylCoAM}}$$

Table 72: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfvlcadC14	sfvlcadC14		0.42		☑

8.18 Reaction vvlcadC12

This is a reversible reaction of one reactant forming two products influenced by 13 modifiers.

Name vvlcadC12

Reaction equation

$$\text{C12AcylCoAMAT} \rightleftharpoons \text{C16AcylCoAMAT, C14AcylCoAMAT, FADtMAT, C16EnoylCoAMAT, C14EnoylCoAMAT, C} \quad (112)$$

Reactant

Table 73: Properties of each reactant.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	

Modifiers

Table 74: Properties of each modifier.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
FADtMAT	FADtMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 75: Properties of each product.

Id	Name	SBO
C12EnoylCoAMAT	C12EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{18} = \text{vol}(\text{VMAT}) \cdot \text{function\_4\_vvlcadC12\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC12}) \quad (113)$$

$$\text{function\_4\_vvlcadC12\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC12}) \quad (114)$$
$$= \text{VLCAD}(\text{sfvlcadC12}, \text{Vvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC14AcylCoAM}$$

$$\text{function\_4\_vvlcadC12\_1}([\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC12EnoylCoAMAT}, \text{KmvlcadC14AcylCoAMAT}, \text{KmvlcadC14EnoylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC16EnoylCoAMAT}, \text{KmvlcadFAD}, \text{KmvlcadFADH}, \text{vol}(\text{VMAT}), \text{Vvlcad}, \text{sfvlcadC12}) \quad (115)$$
$$= \text{VLCAD}(\text{sfvlcadC12}, \text{Vvlcad}, \text{KmvlcadC12AcylCoAMAT}, \text{KmvlcadC16AcylCoAMAT}, \text{KmvlcadC14AcylCoAM}$$

Table 76: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfvlcadC12	sfvlcadC12		0.11		☑

8.19 Reaction vlcadC16

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vlcadC16

Reaction equation

C16AcylCoAMAT $\rightleftharpoons$ C14AcylCoAMAT, C12AcylCoAMAT, C10AcylCoAMAT, C8AcylCoAMAT, FADtMAT, C14

(116)

Reactant

Table 77: Properties of each reactant.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	

Modifiers

Table 78: Properties of each modifier.

Id	Name	SBO
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
FADtMAT	FADtMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 79: Properties of each product.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{19} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vlcadC16\_1}\left(\left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{FADHMAT}\right], \left[\mathrm{FADtMAT}\right], \mathrm{Keqlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC10EnoylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC12EnoylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC14EnoylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC16EnoylCoAMAT}, \mathrm{KmlcadC8AcylCoAMAT}, \mathrm{KmlcadC8EnoylCoAMAT}, \mathrm{KmlcadFAD}, \mathrm{KmlcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vlcad}, \mathrm{sflcadC16}\right) \tag{117}$$

$$\mathrm{function\_4\_vlcadC16\_1}\left(\left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{FADHMAT}\right], \left[\mathrm{FADtMAT}\right], \mathrm{Keqlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC10EnoylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC12EnoylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC14EnoylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC16EnoylCoAMAT}, \mathrm{KmlcadC8AcylCoAMAT}, \mathrm{KmlcadC8EnoylCoAMAT}, \mathrm{KmlcadFAD}, \mathrm{KmlcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vlcad}, \mathrm{sflcadC16}\right) \tag{118}$$
$$= \mathrm{LCAD}\left(\mathrm{sflcadC16}, \mathrm{Vlcad}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{Km}\right.$$

$$\mathrm{function\_4\_vlcadC16\_1}\left(\left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{FADHMAT}\right], \left[\mathrm{FADtMAT}\right], \mathrm{Keqlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC10EnoylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC12EnoylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC14EnoylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC16EnoylCoAMAT}, \mathrm{KmlcadC8AcylCoAMAT}, \mathrm{KmlcadC8EnoylCoAMAT}, \mathrm{KmlcadFAD}, \mathrm{KmlcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vlcad}, \mathrm{sflcadC16}\right) \tag{119}$$
$$= \mathrm{LCAD}\left(\mathrm{sflcadC16}, \mathrm{Vlcad}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{Km}\right.$$

Table 80: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sflcadC16	sflcadC16		0.9		☑

8.20 Reaction vlcadC14

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vlcadC14

Reaction equation

$$\text{C14AcylCoAMAT} \rightleftharpoons \text{C16AcylCoAMAT, C12AcylCoAMAT, C10AcylCoAMAT, C8AcylCoAMAT, FADtMAT, C16} \quad (120)$$

Reactant

Table 81: Properties of each reactant.

Id	Name	SBO
C14AcylCoAMAT	C14AcylCoAMAT	

Modifiers

Table 82: Properties of each modifier.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
FADtMAT	FADtMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	

Id	Name	SBO
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 83: Properties of each product.

Id	Name	SBO
C14EnoylCoAMAT	C14EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{20} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vlcadC14\_1}\left(\left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{FADHMAT}\right], \left[\mathrm{FADtMAT}\right], \mathrm{Keqlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC10EnoylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC12EnoylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC14EnoylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC16EnoylCoAMAT}, \mathrm{KmlcadC8AcylCoAMAT}, \mathrm{KmlcadC8EnoylCoAMAT}, \mathrm{KmlcadFAD}, \mathrm{KmlcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vlcad}, \mathrm{sflcadC14}\right) \tag{121}$$

$$\mathrm{function\_4\_vlcadC14\_1}\left(\left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{FADHMAT}\right], \left[\mathrm{FADtMAT}\right], \mathrm{Keqlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC10EnoylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC12EnoylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC14EnoylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC16EnoylCoAMAT}, \mathrm{KmlcadC8AcylCoAMAT}, \mathrm{KmlcadC8EnoylCoAMAT}, \mathrm{KmlcadFAD}, \mathrm{KmlcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vlcad}, \mathrm{sflcadC14}\right) \tag{122}$$

$$= \mathrm{LCAD}\left(\mathrm{sflcadC14}, \mathrm{Vlcad}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{Km}\right.$$

$$\text{function\_4\_vlcadC14\_1}\left([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC10EnoylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC12EnoylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC14EnoylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC16EnoylCoAMAT}, \text{KmlcadC8AcylCoAMAT}, \text{KmlcadC8EnoylCoAMAT}, \text{KmlcadFAD}, \text{KmlcadFADH}, \text{vol}\left(\text{VMAT}\right), \text{Vlcad}, \text{sflcadC14}\right) = \frac{\text{LCAD}\left(\text{sflcadC14}, \text{Vlcad}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{Km}\right.}{} \tag{123}$$

Table 84: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
`sflcadC14`	sflcadC14		1.0		☑

8.21 Reaction `vlcadC12`

This is a reversible reaction of one reactant forming two products influenced by 20 modifiers.

Name vlcadC12

Reaction equation

$$\text{C12AcylCoAMAT} \rightleftharpoons \frac{\text{C16AcylCoAMAT, C14AcylCoAMAT, C10AcylCoAMAT, C8AcylCoAMAT, FADtMAT, C14}}{} \tag{124}$$

Reactant

Table 85: Properties of each reactant.

Id	Name	SBO
`C12AcylCoAMAT`	C12AcylCoAMAT	

Modifiers

Table 86: Properties of each modifier.

Id	Name	SBO
`C16AcylCoAMAT`	C16AcylCoAMAT	
`C14AcylCoAMAT`	C14AcylCoAMAT	

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
FADtMAT	FADtMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 87: Properties of each product.

Id	Name	SBO
C12EnoylCoAMAT	C12EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{21} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vlcadC12\_1}\left(\left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{FADHMAT}\right], \left[\mathrm{FADtMAT}\right], \mathrm{Keqlcad}, \mathrm{KmlcadC10AcylCoAMAT}, \mathrm{KmlcadC10EnoylCoAMAT}, \mathrm{KmlcadC12AcylCoAMAT}, \mathrm{KmlcadC12EnoylCoAMAT}, \mathrm{KmlcadC14AcylCoAMAT}, \mathrm{KmlcadC14EnoylCoAMAT}, \mathrm{KmlcadC16AcylCoAMAT}, \mathrm{KmlcadC16EnoylCoAMAT}, \mathrm{KmlcadC8AcylCoAMAT}, \mathrm{KmlcadC8EnoylCoAMAT}, \mathrm{KmlcadFAD}, \mathrm{KmlcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vlcad}, \mathrm{sflcadC12}\right) \quad (125)$$

$$\text{function\_4\_vlcadC12\_1}\left([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC10EnoylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC12EnoylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC14EnoylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC16EnoylCoAMAT}, \text{KmlcadC8AcylCoAMAT}, \text{KmlcadC8EnoylCoAMAT}, \text{KmlcadFAD}, \text{KmlcadFADH}, \text{vol}\left(\text{VMAT}\right), \text{Vlcad}, \text{sflcadC12}\right) = \underline{\text{LCAD}\left(\text{sflcadC12}, \text{Vlcad}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{Km}\right.} \tag{126}$$

$$\text{function\_4\_vlcadC12\_1}\left([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC10EnoylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC12EnoylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC14EnoylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC16EnoylCoAMAT}, \text{KmlcadC8AcylCoAMAT}, \text{KmlcadC8EnoylCoAMAT}, \text{KmlcadFAD}, \text{KmlcadFADH}, \text{vol}\left(\text{VMAT}\right), \text{Vlcad}, \text{sflcadC12}\right) = \underline{\text{LCAD}\left(\text{sflcadC12}, \text{Vlcad}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{Km}\right.} \tag{127}$$

Table 88: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
`sflcadC12`	sflcadC12		0.9		☑

8.22 Reaction `vlcadC10`

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vlcadC10

Reaction equation

$$\text{C10AcylCoAMAT} \underset{}{\overset{}{\rightleftharpoons}} \underline{\text{C16AcylCoAMAT, C14AcylCoAMAT, C12AcylCoAMAT, C8AcylCoAMAT, FADtMAT, C16}} \tag{128}$$

Reactant

Table 89: Properties of each reactant.

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	

Modifiers

Table 90: Properties of each modifier.

Id	Name	SBO
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
FADtMAT	FADtMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 91: Properties of each product.

Id	Name	SBO
C10EnoylCoAMAT	C10EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{22} = \text{vol}(\text{VMAT}) \cdot \text{function\_4\_vlcadC10\_1}([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC10EnoylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC12EnoylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC14EnoylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC16EnoylCoAMAT}, \text{KmlcadC8AcylCoAMAT}, \text{KmlcadC8EnoylCoAMAT}, \text{KmlcadFAD}, \text{KmlcadFADH}, \text{vol}(\text{VMAT}), \text{Vlcad}, \text{sflcadC10}) \quad (129)$$

$$\text{function\_4\_vlcadC10\_1}([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC10EnoylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC12EnoylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC14EnoylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC16EnoylCoAMAT}, \text{KmlcadC8AcylCoAMAT}, \text{KmlcadC8EnoylCoAMAT}, \text{KmlcadFAD}, \text{KmlcadFADH}, \text{vol}(\text{VMAT}), \text{Vlcad}, \text{sflcadC10}) \quad (130)$$
$$= \frac{\text{LCAD}(\text{sflcadC10}, \text{Vlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{Km}}{}$$

$$\text{function\_4\_vlcadC10\_1}([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC10EnoylCoAMAT}, \text{KmlcadC12AcylCoAMAT}, \text{KmlcadC12EnoylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{KmlcadC14EnoylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC16EnoylCoAMAT}, \text{KmlcadC8AcylCoAMAT}, \text{KmlcadC8EnoylCoAMAT}, \text{KmlcadFAD}, \text{KmlcadFADH}, \text{vol}(\text{VMAT}), \text{Vlcad}, \text{sflcadC10}) \quad (131)$$
$$= \frac{\text{LCAD}(\text{sflcadC10}, \text{Vlcad}, \text{KmlcadC10AcylCoAMAT}, \text{KmlcadC16AcylCoAMAT}, \text{KmlcadC14AcylCoAMAT}, \text{Km}}{}$$

Table 92: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sflcadC10	sflcadC10		0.75		☑

8.23 Reaction vmcadC12

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vmcadC12

Reaction equation

$$\text{C12AcylCoAMAT} \xrightleftharpoons{\text{C10AcylCoAMAT, C8AcylCoAMAT, C6AcylCoAMAT, C4AcylCoAMAT, FADtMAT, C10Er}} \quad (132)$$

Reactant

Table 93: Properties of each reactant.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	

Modifiers

Table 94: Properties of each modifier.

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
FADtMAT	FADtMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	

Id	Name	SBO
FADtMAT	FADtMAT	

Products

Table 95: Properties of each product.

Id	Name	SBO
C12EnoylCoAMAT	C12EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{23} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmcadC12\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC12}\right) \tag{133}$$

$$\mathrm{function\_4\_vmcadC12\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC12}\right) \tag{134}$$

$$= \frac{\mathrm{MCAD}\left(\mathrm{sfmcadC12}, \mathrm{Vmcad}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC8AcylCoAMA}\right.}{}$$

$$\text{function\_4\_vmcadC12\_1}\left([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C4AcylCoAMAT}], [\text{C4EnoylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C6EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqmcad}, \text{KmmcadC10AcylCoAMAT}, \text{KmmcadC10EnoylCoAMAT}, \text{KmmcadC12AcylCoAMAT}, \text{KmmcadC12EnoylCoAMAT}, \text{KmmcadC4AcylCoAMAT}, \text{KmmcadC4EnoylCoAMAT}, \text{KmmcadC6AcylCoAMAT}, \text{KmmcadC6EnoylCoAMAT}, \text{KmmcadC8AcylCoAMAT}, \text{KmmcadC8EnoylCoAMAT}, \text{KmmcadFAD}, \text{KmmcadFADH}, \text{vol}\left(\text{VMAT}\right), \text{Vmcad}, \text{sfmcadC12}\right) = \frac{\text{MCAD}\left(\text{sfmcadC12}, \text{Vmcad}, \text{KmmcadC12AcylCoAMAT}, \text{KmmcadC10AcylCoAMAT}, \text{KmmcadC8AcylCoAMA}\right.}{} \tag{135}$$

Table 96: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmcadC12	sfmcadC12		0.38		☑

8.24 Reaction vmcadC10

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vmcadC10

Reaction equation

$$\text{C10AcylCoAMAT} \rightleftharpoons \text{C12AcylCoAMAT, C8AcylCoAMAT, C6AcylCoAMAT, C4AcylCoAMAT, FADtMAT, C12En} \tag{136}$$

Reactant

Table 97: Properties of each reactant.

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	

Modifiers

Table 98: Properties of each modifier.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	

Id	Name	SBO
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
FADtMAT	FADtMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 99: Properties of each product.

Id	Name	SBO
C10EnoylCoAMAT	C10EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{24} = \mathrm{vol}\,(\mathrm{VMAT}) \cdot \mathrm{function\_4\_vmcadC10\_1}\,([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\,(\mathrm{VMAT}), \mathrm{Vmcad}, \mathrm{sfmcadC10}) \tag{137}$$

$$\mathrm{function\_4\_vmcadC10\_1}\,([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\,(\mathrm{VMAT}), \mathrm{Vmcad}, \mathrm{sfmcadC10}) \tag{138}$$

$$= \mathrm{MCAD}\,(\mathrm{sfmcadC10}, \mathrm{Vmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC8AcylCoAMA}$$

$$\mathrm{function\_4\_vmcadC10\_1}\,([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\,(\mathrm{VMAT}), \mathrm{Vmcad}, \mathrm{sfmcadC10}) \tag{139}$$

$$= \mathrm{MCAD}\,(\mathrm{sfmcadC10}, \mathrm{Vmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC8AcylCoAMA}$$

Table 100: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmcadC10	sfmcadC10		0.8		☑

8.25 Reaction vmcadC8

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vmcadC8

Reaction equation

$$\text{C8AcylCoAMAT} \xrightleftharpoons{\text{C12AcylCoAMAT, C10AcylCoAMAT, C6AcylCoAMAT, C4AcylCoAMAT, FADtMAT, C12Er}} \quad (140)$$

Reactant

Table 101: Properties of each reactant.

Id	Name	SBO
C8AcylCoAMAT	C8AcylCoAMAT	

Modifiers

Table 102: Properties of each modifier.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
FADtMAT	FADtMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	

Id	Name	SBO
FADtMAT	FADtMAT	

Products

Table 103: Properties of each product.

Id	Name	SBO
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{25} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmcadC8\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC8}\right) \tag{141}$$

$$\mathrm{function\_4\_vmcadC8\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC8}\right) \tag{142}$$

$$= \frac{\mathrm{MCAD}\left(\mathrm{sfmcadC8}, \mathrm{Vmcad}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}\right.}{}$$

$$\text{function\_4\_vmcadC8\_1}\left([\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C4AcylCoAMAT}], [\text{C4EnoylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C6EnoylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{FADHMAT}], [\text{FADtMAT}], \text{Keqmcad}, \text{KmmcadC10AcylCoAMAT}, \text{KmmcadC10EnoylCoAMAT}, \text{KmmcadC12AcylCoAMAT}, \text{KmmcadC12EnoylCoAMAT}, \text{KmmcadC4AcylCoAMAT}, \text{KmmcadC4EnoylCoAMAT}, \text{KmmcadC6AcylCoAMAT}, \text{KmmcadC6EnoylCoAMAT}, \text{KmmcadC8AcylCoAMAT}, \text{KmmcadC8EnoylCoAMAT}, \text{KmmcadFAD}, \text{KmmcadFADH}, \text{vol}\left(\text{VMAT}\right), \text{Vmcad}, \text{sfmcadC8}\right) = \frac{\text{MCAD}\left(\text{sfmcadC8}, \text{Vmcad}, \text{KmmcadC8AcylCoAMAT}, \text{KmmcadC12AcylCoAMAT}, \text{KmmcadC10AcylCoAMAT}\right.}{} \tag{143}$$

Table 104: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmcadC8	sfmcadC8		0.87		☑

8.26 Reaction vmcadC6

This is a reversible reaction of one reactant forming two products influenced by 21 modifiers.

Name vmcadC6

Reaction equation

$$\text{C6AcylCoAMAT} \rightleftharpoons \text{C12AcylCoAMAT, C10AcylCoAMAT, C8AcylCoAMAT, C4AcylCoAMAT, FADtMAT, C12En} \tag{144}$$

Reactant

Table 105: Properties of each reactant.

Id	Name	SBO
C6AcylCoAMAT	C6AcylCoAMAT	

Modifiers

Table 106: Properties of each modifier.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
FADtMAT	FADtMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 107: Properties of each product.

Id	Name	SBO
C6EnoylCoAMAT	C6EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{26} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmcadC6\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC6}\right) \tag{145}$$

$$\mathrm{function\_4\_vmcadC6\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC6}\right) \tag{146}$$
$$= \mathrm{MCAD}\left(\mathrm{sfmcadC6}, \mathrm{Vmcad}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}$$

$$\mathrm{function\_4\_vmcadC6\_1}\left([\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqmcad}, \mathrm{KmmcadC10AcylCoAMAT}, \mathrm{KmmcadC10EnoylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC12EnoylCoAMAT}, \mathrm{KmmcadC4AcylCoAMAT}, \mathrm{KmmcadC4EnoylCoAMAT}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC6EnoylCoAMAT}, \mathrm{KmmcadC8AcylCoAMAT}, \mathrm{KmmcadC8EnoylCoAMAT}, \mathrm{KmmcadFAD}, \mathrm{KmmcadFADH}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmcad}, \mathrm{sfmcadC6}\right) \tag{147}$$
$$= \mathrm{MCAD}\left(\mathrm{sfmcadC6}, \mathrm{Vmcad}, \mathrm{KmmcadC6AcylCoAMAT}, \mathrm{KmmcadC12AcylCoAMAT}, \mathrm{KmmcadC10AcylCoAMAT}$$

Table 108: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmcadC6	sfmcadC6		1.0		☑

8.27 Reaction vscadC4

This is a reversible reaction of one reactant forming two products influenced by nine modifiers.

Name vscadC4

Reaction equation

$$\text{C4AcylCoAMAT} \xrightleftharpoons{\text{C6AcylCoAMAT, FADtMAT, C6EnoylCoAMAT, C4AcylCoAMAT, C4EnoylCoAMAT, C6Acy}} \quad (148)$$

Reactant

Table 109: Properties of each reactant.

Id	Name	SBO
C4AcylCoAMAT	C4AcylCoAMAT	

Modifiers

Table 110: Properties of each modifier.

Id	Name	SBO
C6AcylCoAMAT	C6AcylCoAMAT	
FADtMAT	FADtMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
FADHMAT	FADHMAT	
FADtMAT	FADtMAT	

Products

Table 111: Properties of each product.

Id	Name	SBO
C4EnoylCoAMAT	C4EnoylCoAMAT	
FADHMAT	FADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{27} = \mathrm{vol}(\mathrm{VMAT}) \cdot \mathrm{function\_4\_vscadC4\_1}([\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqscad}, \mathrm{KmscadC4AcylCoAMAT}, \mathrm{KmscadC4EnoylCoAMAT}, \mathrm{KmscadC6AcylCoAMAT}, \mathrm{KmscadC6EnoylCoAMAT}, \mathrm{KmscadFAD}, \mathrm{KmscadFADH}, \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vscad}, \mathrm{sfscadC4}) \quad (149)$$

$$\mathrm{function\_4\_vscadC4\_1}([\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqscad}, \mathrm{KmscadC4AcylCoAMAT}, \mathrm{KmscadC4EnoylCoAMAT}, \mathrm{KmscadC6AcylCoAMAT}, \mathrm{KmscadC6EnoylCoAMAT}, \mathrm{KmscadFAD}, \mathrm{KmscadFADH}, \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vscad}, \mathrm{sfscadC4}) \quad (150)$$
$$= \frac{\mathrm{SCAD}(\mathrm{sfscadC4}, \mathrm{Vscad}, \mathrm{KmscadC4AcylCoAMAT}, \mathrm{KmscadC6AcylCoAMAT}, \mathrm{KmscadFAD}, \mathrm{KmscadC4EnoylCo}}{}$$

$$\mathrm{function\_4\_vscadC4\_1}([\mathrm{C4AcylCoAMAT}], [\mathrm{C4EnoylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C6EnoylCoAMAT}], [\mathrm{FADHMAT}], [\mathrm{FADtMAT}], \mathrm{Keqscad}, \mathrm{KmscadC4AcylCoAMAT}, \mathrm{KmscadC4EnoylCoAMAT}, \mathrm{KmscadC6AcylCoAMAT}, \mathrm{KmscadC6EnoylCoAMAT}, \mathrm{KmscadFAD}, \mathrm{KmscadFADH}, \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vscad}, \mathrm{sfscadC4}) \quad (151)$$
$$= \frac{\mathrm{SCAD}(\mathrm{sfscadC4}, \mathrm{Vscad}, \mathrm{KmscadC4AcylCoAMAT}, \mathrm{KmscadC6AcylCoAMAT}, \mathrm{KmscadFAD}, \mathrm{KmscadC4EnoylCo}}{}$$

Table 112: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfscadC4	sfscadC4		1.0		☑

8.28 Reaction vmckatC6

This is a reversible reaction of one reactant forming two products influenced by 29 modifiers.

Name vmckatC6

Reaction equation

$$\mathrm{C6KetoacylCoAMAT} \xrightleftharpoons{\mathrm{C16KetoacylCoAMAT},\ \mathrm{C14KetoacylCoAMAT},\ \mathrm{C12KetoacylCoAMAT},\ \mathrm{C10KetoacylCoAM} \quad (152)$$

Reactant

Table 113: Properties of each reactant.

Id	Name	SBO
C6KetoacylCoAMAT	C6KetoacylCoAMAT	

Modifiers

Table 114: Properties of each modifier.

Id	Name	SBO
C16KetoacylCoAMAT	C16KetoacylCoAMAT	
C14KetoacylCoAMAT	C14KetoacylCoAMAT	
C12KetoacylCoAMAT	C12KetoacylCoAMAT	
C10KetoacylCoAMAT	C10KetoacylCoAMAT	
C8KetoacylCoAMAT	C8KetoacylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10KetoacylCoAMAT	C10KetoacylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12KetoacylCoAMAT	C12KetoacylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14KetoacylCoAMAT	C14KetoacylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16KetoacylCoAMAT	C16KetoacylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8KetoacylCoAMAT	C8KetoacylCoAMAT	
CoAMAT	CoAMAT	

Products

Table 115: Properties of each product.

Id	Name	SBO
C4AcylCoAMAT	C4AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{28} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmckatC6\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10KetoacylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12KetoacylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14KetoacylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16KetoacylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C6KetoacylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8KetoacylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmckat}, \mathrm{KmmckatAcetylCoAMAT}, \mathrm{KmmckatC10AcylCoAMAT}, \mathrm{KmmckatC10KetoacylCoAMAT}, \mathrm{KmmckatC12AcylCoAMAT}, \mathrm{KmmckatC12KetoacylCoAMAT}, \mathrm{KmmckatC14AcylCoAMAT}, \mathrm{KmmckatC14KetoacylCoAMAT}, \mathrm{KmmckatC16AcylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC4AcetoacylCoAMAT}, \mathrm{KmmckatC4AcylCoAMAT}, \mathrm{KmmckatC6AcylCoAMAT}, \mathrm{KmmckatC6KetoacylCoAMAT}, \mathrm{KmmckatC8AcylCoAMAT}, \mathrm{KmmckatC8KetoacylCoAMAT}, \mathrm{KmmckatCoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmckat}, \mathrm{sfmckatC6}\right) \tag{153}$$

$$\begin{aligned}&\mathrm{function\_4\_vmckatC6\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10KetoacylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12KetoacylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14KetoacylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16KetoacylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C6KetoacylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8KetoacylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmckat}, \mathrm{KmmckatAcetylCoAMAT}, \mathrm{KmmckatC10AcylCoAMAT}, \mathrm{KmmckatC10KetoacylCoAMAT}, \mathrm{KmmckatC12AcylCoAMAT}, \mathrm{KmmckatC12KetoacylCoAMAT}, \mathrm{KmmckatC14AcylCoAMAT}, \mathrm{KmmckatC14KetoacylCoAMAT}, \mathrm{KmmckatC16AcylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC4AcetoacylCoAMAT}, \mathrm{KmmckatC4AcylCoAMAT}, \mathrm{KmmckatC6AcylCoAMAT}, \mathrm{KmmckatC6KetoacylCoAMAT}, \mathrm{KmmckatC8AcylCoAMAT}, \mathrm{KmmckatC8KetoacylCoAMAT}, \mathrm{KmmckatCoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmckat}, \mathrm{sfmckatC6}\right)\\ &= \frac{\mathrm{MCKATA}\left(\mathrm{sfmckatC6}, \mathrm{Vmckat}, \mathrm{KmmckatC6KetoacylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC14}\right.}{}\end{aligned} \tag{154}$$

$$\text{function\_4\_vmckatC6\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10KetoacylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12KetoacylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14KetoacylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16KetoacylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C6KetoacylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8KetoacylCoAMAT}], [\text{CoAMAT}], \text{Keqmckat}, \text{KmmckatAcetylCoAMAT}, \text{KmmckatC10AcylCoAMAT}, \text{KmmckatC10KetoacylCoAMAT}, \text{KmmckatC12AcylCoAMAT}, \text{KmmckatC12KetoacylCoAMAT}, \text{KmmckatC14AcylCoAMAT}, \text{KmmckatC14KetoacylCoAMAT}, \text{KmmckatC16AcylCoAMAT}, \text{KmmckatC16KetoacylCoAMAT}, \text{KmmckatC4AcetoacylCoAMAT}, \text{KmmckatC4AcylCoAMAT}, \text{KmmckatC6AcylCoAMAT}, \text{KmmckatC6KetoacylCoAMAT}, \text{KmmckatC8AcylCoAMAT}, \text{KmmckatC8KetoacylCoAMAT}, \text{KmmckatCoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vmckat}, \text{sfmckatC6}\right) \quad (155)$$
$$= \frac{\text{MCKATA}\left(\text{sfmckatC6}, \text{Vmckat}, \text{KmmckatC6KetoacylCoAMAT}, \text{KmmckatC16KetoacylCoAMAT}, \text{KmmckatC14}\right.}{}$$

Table 116: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmckatC6	sfmckatC6		1.0		☑

8.29 Reaction vmckatC4

This is a reversible reaction of one reactant forming one product influenced by 30 modifiers.

Name vmckatC4

Reaction equation

$$\text{C4AcetoacylCoAMAT} \xrightleftharpoons{\text{C16KetoacylCoAMAT, C14KetoacylCoAMAT, C12KetoacylCoAMAT, C10KetoacylCoAM} \quad (156)$$

Reactant

Table 117: Properties of each reactant.

Id	Name	SBO
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	

Modifiers

Table 118: Properties of each modifier.

Id	Name	SBO
C16KetoacylCoAMAT	C16KetoacylCoAMAT	
C14KetoacylCoAMAT	C14KetoacylCoAMAT	
C12KetoacylCoAMAT	C12KetoacylCoAMAT	
C10KetoacylCoAMAT	C10KetoacylCoAMAT	
C8KetoacylCoAMAT	C8KetoacylCoAMAT	
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
CoAMAT	CoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10KetoacylCoAMAT	C10KetoacylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12KetoacylCoAMAT	C12KetoacylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14KetoacylCoAMAT	C14KetoacylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16KetoacylCoAMAT	C16KetoacylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C4AcylCoAMAT	C4AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8KetoacylCoAMAT	C8KetoacylCoAMAT	
CoAMAT	CoAMAT	

Product

Table 119: Properties of each product.

Id	Name	SBO
AcetylCoAMAT	AcetylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{29} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmckatC4\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10KetoacylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12KetoacylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14KetoacylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16KetoacylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C6KetoacylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8KetoacylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmckat}, \mathrm{KmmckatAcetylCoAMAT}, \mathrm{KmmckatC10AcylCoAMAT}, \mathrm{KmmckatC10KetoacylCoAMAT}, \mathrm{KmmckatC12AcylCoAMAT}, \mathrm{KmmckatC12KetoacylCoAMAT}, \mathrm{KmmckatC14AcylCoAMAT}, \mathrm{KmmckatC14KetoacylCoAMAT}, \mathrm{KmmckatC16AcylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC4AcetoacylCoAMAT}, \mathrm{KmmckatC4AcylCoAMAT}, \mathrm{KmmckatC6AcylCoAMAT}, \mathrm{KmmckatC6KetoacylCoAMAT}, \mathrm{KmmckatC8AcylCoAMAT}, \mathrm{KmmckatC8KetoacylCoAMAT}, \mathrm{KmmckatCoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmckat}, \mathrm{sfmckatC4}\right) \tag{157}$$

$$\begin{aligned}&\mathrm{function\_4\_vmckatC4\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10KetoacylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12KetoacylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14KetoacylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16KetoacylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \left[\mathrm{C4AcylCoAMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C6KetoacylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8KetoacylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmckat}, \mathrm{KmmckatAcetylCoAMAT}, \mathrm{KmmckatC10AcylCoAMAT}, \mathrm{KmmckatC10KetoacylCoAMAT}, \mathrm{KmmckatC12AcylCoAMAT}, \mathrm{KmmckatC12KetoacylCoAMAT}, \mathrm{KmmckatC14AcylCoAMAT}, \mathrm{KmmckatC14KetoacylCoAMAT}, \mathrm{KmmckatC16AcylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC4AcetoacylCoAMAT}, \mathrm{KmmckatC4AcylCoAMAT}, \mathrm{KmmckatC6AcylCoAMAT}, \mathrm{KmmckatC6KetoacylCoAMAT}, \mathrm{KmmckatC8AcylCoAMAT}, \mathrm{KmmckatC8KetoacylCoAMAT}, \mathrm{KmmckatCoAMAT}, \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmckat}, \mathrm{sfmckatC4}\right)\\ &= \frac{\mathrm{MCKATB}\left(\mathrm{sfmckatC4}, \mathrm{Vmckat}, \mathrm{KmmckatC4AcetoacylCoAMAT}, \mathrm{KmmckatC16KetoacylCoAMAT}, \mathrm{KmmckatC1}\right.}{}\end{aligned} \tag{158}$$

$$\text{function\_4\_vmckatC4\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10KetoacylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12KetoacylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14KetoacylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16KetoacylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C4AcylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C6KetoacylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8KetoacylCoAMAT}], [\text{CoAMAT}], \text{Keqmckat}, \text{KmmckatAcetylCoAMAT}, \text{KmmckatC10AcylCoAMAT}, \text{KmmckatC10KetoacylCoAMAT}, \text{KmmckatC12AcylCoAMAT}, \text{KmmckatC12KetoacylCoAMAT}, \text{KmmckatC14AcylCoAMAT}, \text{KmmckatC14KetoacylCoAMAT}, \text{KmmckatC16AcylCoAMAT}, \text{KmmckatC16KetoacylCoAMAT}, \text{KmmckatC4AcetoacylCoAMAT}, \text{KmmckatC4AcylCoAMAT}, \text{KmmckatC6AcylCoAMAT}, \text{KmmckatC6KetoacylCoAMAT}, \text{KmmckatC8AcylCoAMAT}, \text{KmmckatC8KetoacylCoAMAT}, \text{KmmckatCoAMAT}, \text{vol}\left(\text{VMAT}\right), \text{Vmckat}, \text{sfmckatC4}\right) = \text{MCKATB}\left(\text{sfmckatC4}, \text{Vmckat}, \text{KmmckatC4AcetoacylCoAMAT}, \text{KmmckatC16KetoacylCoAMAT}, \text{KmmckatC1}\right) \tag{159}$$

Table 120: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmckatC4	sfmckatC4		0.49		☑

8.30 Reaction vmtpC16

This is a reversible reaction of one reactant forming three products influenced by 28 modifiers.

Name vmtpC16

Reaction equation

$$\text{C16EnoylCoAMAT} \rightleftharpoons \text{C14EnoylCoAMAT}, \text{C12EnoylCoAMAT}, \text{C10EnoylCoAMAT}, \text{C8EnoylCoAMAT}, \text{NADtMAT} \tag{160}$$

Reactant

Table 121: Properties of each reactant.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	

Modifiers

Table 122: Properties of each modifier.

Id	Name	SBO
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
NADtMAT	NADtMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
CoAMAT	CoAMAT	
NADHMAT	NADHMAT	
NADtMAT	NADtMAT	

Products

Table 123: Properties of each product.

Id	Name	SBO
C14AcylCoAMAT	C14AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{30} = \mathrm{vol}(\mathrm{VMAT}) \cdot \mathrm{function\_4\_vmtpC16\_1}([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vmtp}, \mathrm{sfmtpC16}) \tag{161}$$

$$\mathrm{function\_4\_vmtpC16\_1}([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vmtp}, \mathrm{sfmtpC16}) \tag{162}$$

$$= \frac{\mathrm{MTP}(\mathrm{sfmtpC16}, \mathrm{Vmtp}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{Km}}{}$$

$$\mathrm{function\_4\_vmtpC16\_1}([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vmtp}, \mathrm{sfmtpC16}) \tag{163}$$

$$= \frac{\mathrm{MTP}(\mathrm{sfmtpC16}, \mathrm{Vmtp}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{Km}}{}$$

Table 124: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmtpC16	sfmtpC16		1.0		☑

8.31 Reaction vmtpC14

This is a reversible reaction of one reactant forming three products influenced by 28 modifiers.

Name vmtpC14

Reaction equation

$$\text{C14EnoylCoAMAT} \rightleftharpoons \text{C16EnoylCoAMAT, C12EnoylCoAMAT, C10EnoylCoAMAT, C8EnoylCoAMAT, NADtMAT} \quad (164)$$

Reactant

Table 125: Properties of each reactant.

Id	Name	SBO
C14EnoylCoAMAT	C14EnoylCoAMAT	

Modifiers

Table 126: Properties of each modifier.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
NADtMAT	NADtMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	

Id	Name	SBO
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
CoAMAT	CoAMAT	
NADHMAT	NADHMAT	
NADtMAT	NADtMAT	

Products

Table 127: Properties of each product.

Id	Name	SBO
C12AcylCoAMAT	C12AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$
\begin{aligned}
v_{31} = {} & \mathrm{vol}\left(\mathrm{VMAT}\right) \\
& \cdot \mathrm{function\_4\_vmtpC14\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \right. \\
& \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \\
& \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \\
& \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmtp}, \\
& \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \\
& \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \\
& \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \\
& \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \\
& \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, \\
& \left.\left[\mathrm{NADHMAT}\right], \left[\mathrm{NADtMAT}\right], \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmtp}, \mathrm{sfmtpC14}\right)
\end{aligned}
\tag{165}
$$

$$\text{function\_4\_vmtpC14\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{CoAMAT}], \text{Keqmtp}, \text{KicrotC4AcetoacylCoA}, \text{KmmtpAcetylCoAMAT}, \text{KmmtpC10AcylCoAMAT}, \text{KmmtpC10EnoylCoAMAT}, \text{KmmtpC12AcylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{KmmtpC14AcylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16AcylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC6AcylCoAMAT}, \text{KmmtpC8AcylCoAMAT}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpCoAMAT}, \text{KmmtpNADHMAT}, \text{KmmtpNADMAT}, [\text{NADHMAT}], [\text{NADtMAT}], \text{vol}\left(\text{VMAT}\right), \text{Vmtp}, \text{sfmtpC14}\right) = \text{MTP}\left(\text{sfmtpC14}, \text{Vmtp}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{Km} \right. \tag{166}$$

$$\text{function\_4\_vmtpC14\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{CoAMAT}], \text{Keqmtp}, \text{KicrotC4AcetoacylCoA}, \text{KmmtpAcetylCoAMAT}, \text{KmmtpC10AcylCoAMAT}, \text{KmmtpC10EnoylCoAMAT}, \text{KmmtpC12AcylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{KmmtpC14AcylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16AcylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC6AcylCoAMAT}, \text{KmmtpC8AcylCoAMAT}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpCoAMAT}, \text{KmmtpNADHMAT}, \text{KmmtpNADMAT}, [\text{NADHMAT}], [\text{NADtMAT}], \text{vol}\left(\text{VMAT}\right), \text{Vmtp}, \text{sfmtpC14}\right) = \text{MTP}\left(\text{sfmtpC14}, \text{Vmtp}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{Km} \right. \tag{167}$$

Table 128: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmtpC14	sfmtpC14		0.9		☑

8.32 Reaction vmtpC12

This is a reversible reaction of one reactant forming three products influenced by 28 modifiers.

Name vmtpC12

Reaction equation

$$\text{C12EnoylCoAMAT} \rightleftharpoons \text{C16EnoylCoAMAT, C14EnoylCoAMAT, C10EnoylCoAMAT, C8EnoylCoAMAT, NADtMAT} \tag{168}$$

Reactant

Table 129: Properties of each reactant.

Id	Name	SBO
C12EnoylCoAMAT	C12EnoylCoAMAT	

Modifiers

Table 130: Properties of each modifier.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
NADtMAT	NADtMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
CoAMAT	CoAMAT	
NADHMAT	NADHMAT	
NADtMAT	NADtMAT	

Products

Table 131: Properties of each product.

Id	Name	SBO
C10AcylCoAMAT	C10AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{32} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmtpC12\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, \left[\mathrm{NADHMAT}\right], \left[\mathrm{NADtMAT}\right], \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmtp}, \mathrm{sfmtpC12}\right) \tag{169}$$

$$\mathrm{function\_4\_vmtpC12\_1}\left(\left[\mathrm{AcetylCoAMAT}\right], \left[\mathrm{C10AcylCoAMAT}\right], \left[\mathrm{C10EnoylCoAMAT}\right], \left[\mathrm{C12AcylCoAMAT}\right], \left[\mathrm{C12EnoylCoAMAT}\right], \left[\mathrm{C14AcylCoAMAT}\right], \left[\mathrm{C14EnoylCoAMAT}\right], \left[\mathrm{C16AcylCoAMAT}\right], \left[\mathrm{C16EnoylCoAMAT}\right], \left[\mathrm{C4AcetoacylCoAMAT}\right], \left[\mathrm{C6AcylCoAMAT}\right], \left[\mathrm{C8AcylCoAMAT}\right], \left[\mathrm{C8EnoylCoAMAT}\right], \left[\mathrm{CoAMAT}\right], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, \left[\mathrm{NADHMAT}\right], \left[\mathrm{NADtMAT}\right], \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmtp}, \mathrm{sfmtpC12}\right) \tag{170}$$

$$= \frac{\mathrm{MTP}\left(\mathrm{sfmtpC12}, \mathrm{Vmtp}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{Km}\right.}{}$$

$$\text{function\_4\_vmtpC12\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{CoAMAT}], \text{Keqmtp}, \text{KicrotC4AcetoacylCoA}, \text{KmmtpAcetylCoAMAT}, \text{KmmtpC10AcylCoAMAT}, \text{KmmtpC10EnoylCoAMAT}, \text{KmmtpC12AcylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{KmmtpC14AcylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16AcylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC6AcylCoAMAT}, \text{KmmtpC8AcylCoAMAT}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpCoAMAT}, \text{KmmtpNADHMAT}, \text{KmmtpNADMAT}, [\text{NADHMAT}], [\text{NADtMAT}], \text{vol}\left(\text{VMAT}\right), \text{Vmtp}, \text{sfmtpC12}\right) \tag{171}$$
$$= \frac{\text{MTP}\left(\text{sfmtpC12}, \text{Vmtp}, \text{KmmtpC12EnoylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{Km}\right.}{}$$

Table 132: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmtpC12	sfmtpC12		0.81		☑

8.33 Reaction vmtpC10

This is a reversible reaction of one reactant forming three products influenced by 28 modifiers.

Name vmtpC10

Reaction equation

$$\text{C10EnoylCoAMAT} \rightleftharpoons \text{C16EnoylCoAMAT, C14EnoylCoAMAT, C12EnoylCoAMAT, C8EnoylCoAMAT, NADtMAT} \tag{172}$$

Reactant

Table 133: Properties of each reactant.

Id	Name	SBO
C10EnoylCoAMAT	C10EnoylCoAMAT	

Modifiers

Table 134: Properties of each modifier.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
NADtMAT	NADtMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
CoAMAT	CoAMAT	
NADHMAT	NADHMAT	
NADtMAT	NADtMAT	

Products

Table 135: Properties of each product.

Id	Name	SBO
C8AcylCoAMAT	C8AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{33} = \mathrm{vol}(\mathrm{VMAT}) \cdot \mathrm{function\_4\_vmtpC10\_1}([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vmtp}, \mathrm{sfmtpC10}) \tag{173}$$

$$\mathrm{function\_4\_vmtpC10\_1}([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vmtp}, \mathrm{sfmtpC10}) \tag{174}$$

$$= \frac{\mathrm{MTP}(\mathrm{sfmtpC10}, \mathrm{Vmtp}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{Km}}{}$$

$$\mathrm{function\_4\_vmtpC10\_1}([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}(\mathrm{VMAT}), \mathrm{Vmtp}, \mathrm{sfmtpC10}) \tag{175}$$

$$= \frac{\mathrm{MTP}(\mathrm{sfmtpC10}, \mathrm{Vmtp}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{Km}}{}$$

Table 136: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmtpC10	sfmtpC10		0.73		☑

8.34 Reaction vmtpC8

This is a reversible reaction of one reactant forming three products influenced by 28 modifiers.

Name vmtpC8

Reaction equation

$$\text{C8EnoylCoAMAT} \rightleftharpoons \text{C16EnoylCoAMAT, C14EnoylCoAMAT, C12EnoylCoAMAT, C10EnoylCoAMAT, NADtMAT} \quad (176)$$

Reactant

Table 137: Properties of each reactant.

Id	Name	SBO
C8EnoylCoAMAT	C8EnoylCoAMAT	

Modifiers

Table 138: Properties of each modifier.

Id	Name	SBO
C16EnoylCoAMAT	C16EnoylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C10EnoylCoAMAT	C10EnoylCoAMAT	
NADtMAT	NADtMAT	
CoAMAT	CoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
C10AcylCoAMAT	C10AcylCoAMAT	

Id	Name	SBO
C10EnoylCoAMAT	C10EnoylCoAMAT	
C12AcylCoAMAT	C12AcylCoAMAT	
C12EnoylCoAMAT	C12EnoylCoAMAT	
C14AcylCoAMAT	C14AcylCoAMAT	
C14EnoylCoAMAT	C14EnoylCoAMAT	
C16AcylCoAMAT	C16AcylCoAMAT	
C16EnoylCoAMAT	C16EnoylCoAMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C6AcylCoAMAT	C6AcylCoAMAT	
C8AcylCoAMAT	C8AcylCoAMAT	
C8EnoylCoAMAT	C8EnoylCoAMAT	
CoAMAT	CoAMAT	
NADHMAT	NADHMAT	
NADtMAT	NADtMAT	

Products

Table 139: Properties of each product.

Id	Name	SBO
C6AcylCoAMAT	C6AcylCoAMAT	
AcetylCoAMAT	AcetylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{34} = \mathrm{vol}\left(\mathrm{VMAT}\right) \cdot \mathrm{function\_4\_vmtpC8\_1}\left([\mathrm{AcetylCoAMAT}], [\mathrm{C10AcylCoAMAT}], [\mathrm{C10EnoylCoAMAT}], [\mathrm{C12AcylCoAMAT}], [\mathrm{C12EnoylCoAMAT}], [\mathrm{C14AcylCoAMAT}], [\mathrm{C14EnoylCoAMAT}], [\mathrm{C16AcylCoAMAT}], [\mathrm{C16EnoylCoAMAT}], [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{C6AcylCoAMAT}], [\mathrm{C8AcylCoAMAT}], [\mathrm{C8EnoylCoAMAT}], [\mathrm{CoAMAT}], \mathrm{Keqmtp}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{KmmtpAcetylCoAMAT}, \mathrm{KmmtpC10AcylCoAMAT}, \mathrm{KmmtpC10EnoylCoAMAT}, \mathrm{KmmtpC12AcylCoAMAT}, \mathrm{KmmtpC12EnoylCoAMAT}, \mathrm{KmmtpC14AcylCoAMAT}, \mathrm{KmmtpC14EnoylCoAMAT}, \mathrm{KmmtpC16AcylCoAMAT}, \mathrm{KmmtpC16EnoylCoAMAT}, \mathrm{KmmtpC6AcylCoAMAT}, \mathrm{KmmtpC8AcylCoAMAT}, \mathrm{KmmtpC8EnoylCoAMAT}, \mathrm{KmmtpCoAMAT}, \mathrm{KmmtpNADHMAT}, \mathrm{KmmtpNADMAT}, [\mathrm{NADHMAT}], [\mathrm{NADtMAT}], \mathrm{vol}\left(\mathrm{VMAT}\right), \mathrm{Vmtp}, \mathrm{sfmtpC8}\right) \quad (177)$$

$$\text{function\_4\_vmtpC8\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{CoAMAT}], \text{Keqmtp}, \text{KicrotC4AcetoacylCoA}, \text{KmmtpAcetylCoAMAT}, \text{KmmtpC10AcylCoAMAT}, \text{KmmtpC10EnoylCoAMAT}, \text{KmmtpC12AcylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{KmmtpC14AcylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16AcylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC6AcylCoAMAT}, \text{KmmtpC8AcylCoAMAT}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpCoAMAT}, \text{KmmtpNADHMAT}, \text{KmmtpNADMAT}, [\text{NADHMAT}], [\text{NADtMAT}], \text{vol}\left(\text{VMAT}\right), \text{Vmtp}, \text{sfmtpC8}\right) \tag{178}$$
$$= \underline{\text{MTP}\left(\text{sfmtpC8}, \text{Vmtp}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{Kmm}\right.}$$

$$\text{function\_4\_vmtpC8\_1}\left([\text{AcetylCoAMAT}], [\text{C10AcylCoAMAT}], [\text{C10EnoylCoAMAT}], [\text{C12AcylCoAMAT}], [\text{C12EnoylCoAMAT}], [\text{C14AcylCoAMAT}], [\text{C14EnoylCoAMAT}], [\text{C16AcylCoAMAT}], [\text{C16EnoylCoAMAT}], [\text{C4AcetoacylCoAMAT}], [\text{C6AcylCoAMAT}], [\text{C8AcylCoAMAT}], [\text{C8EnoylCoAMAT}], [\text{CoAMAT}], \text{Keqmtp}, \text{KicrotC4AcetoacylCoA}, \text{KmmtpAcetylCoAMAT}, \text{KmmtpC10AcylCoAMAT}, \text{KmmtpC10EnoylCoAMAT}, \text{KmmtpC12AcylCoAMAT}, \text{KmmtpC12EnoylCoAMAT}, \text{KmmtpC14AcylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{KmmtpC16AcylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC6AcylCoAMAT}, \text{KmmtpC8AcylCoAMAT}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpCoAMAT}, \text{KmmtpNADHMAT}, \text{KmmtpNADMAT}, [\text{NADHMAT}], [\text{NADtMAT}], \text{vol}\left(\text{VMAT}\right), \text{Vmtp}, \text{sfmtpC8}\right) \tag{179}$$
$$= \underline{\text{MTP}\left(\text{sfmtpC8}, \text{Vmtp}, \text{KmmtpC8EnoylCoAMAT}, \text{KmmtpC16EnoylCoAMAT}, \text{KmmtpC14EnoylCoAMAT}, \text{Kmm}\right.}$$

Table 140: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
sfmtpC8	sfmtpC8		0.34		☑

8.35 Reaction vacesink

This is a reversible reaction of one reactant forming no product influenced by one modifier.

Name vacesink

Reaction equation

$$\text{AcetylCoAMAT} \underset{\text{AcetylCoAMAT}}{\rightleftharpoons} \emptyset \tag{180}$$

Reactant

Table 141: Properties of each reactant.

Id	Name	SBO
AcetylCoAMAT	AcetylCoAMAT	

Modifier

Table 142: Properties of each modifier.

Id	Name	SBO
AcetylCoAMAT	AcetylCoAMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{35} = \mathrm{vol}(\mathrm{VMAT}) \cdot \mathrm{function\_4\_vacesink\_1}([\mathrm{AcetylCoAMAT}], \mathrm{K1acesink}, \mathrm{Ksacesink}, \mathrm{vol}(\mathrm{VMAT}))$$

$$\mathrm{function\_4\_vacesink\_1}([\mathrm{AcetylCoAMAT}], \mathrm{K1acesink}, \mathrm{Ksacesink}, \mathrm{vol}(\mathrm{VMAT})) = \frac{\mathrm{RES}(\mathrm{Ksacesink}, [\mathrm{AcetylCoAMAT}], \mathrm{K1acesink})}{\mathrm{vol}(\mathrm{VMAT})} \quad (182)$$

$$\mathrm{function\_4\_vacesink\_1}([\mathrm{AcetylCoAMAT}], \mathrm{K1acesink}, \mathrm{Ksacesink}, \mathrm{vol}(\mathrm{VMAT})) = \frac{\mathrm{RES}(\mathrm{Ksacesink}, [\mathrm{AcetylCoAMAT}], \mathrm{K1acesink})}{\mathrm{vol}(\mathrm{VMAT})} \quad (183)$$

Table 143: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
K1acesink	K1acesink		30.0		☑
Ksacesink	Ksacesink		6000000.0		☑

8.36 Reaction reaction_1

This is a reversible reaction of two reactants forming two products influenced by eight modifiers.

Name vcrmsC6

Reaction equation

$$\mathrm{C6EnoylCoAMAT} + \mathrm{species\_1} \xrightleftharpoons{\mathrm{C4AcetoacylCoAMAT,\ C4EnoylCoAMAT,\ C6EnoylCoAMAT,\ species\_1,\ C6Ketoa}} \quad (184)$$

Reactants

Table 144: Properties of each reactant.

Id	Name	SBO
C6EnoylCoAMAT	C6EnoylCoAMAT	
species_1	NAD	

Modifiers

Table 145: Properties of each modifier.

Id	Name	SBO
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
species_1	NAD	
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
NADHMAT	NADHMAT	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	

Products

Table 146: Properties of each product.

Id	Name	SBO
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{36} = \mathrm{vol}\,(\mathrm{VMAT}) \cdot \mathrm{CRMS\_C6}\,(\mathrm{sfcrotC6}, \mathrm{Vcrot}, \mathrm{sfmschadC6}, \mathrm{Vmschad}, [\mathrm{C6EnoylCoAMAT}], [\mathrm{species\_1}], \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KmmschadC6HydroxyacylCoAMAT}, \mathrm{KmmschadNADMAT}, [\mathrm{C6KetoacylCoAMAT}], [\mathrm{NADHMAT}], \mathrm{Keqcrot}, \mathrm{Keqmschad}, \mathrm{KmmschadC6KetoacylCoAMAT}, [\mathrm{C4AcetoacylCoAMAT}], \mathrm{KmmschadC4AcetoacylCoAMAT}, \mathrm{KmmschadNADHMAT}, [\mathrm{C4EnoylCoAMAT}], \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{vol}\,(\mathrm{VMAT})) \tag{185}$$

$$\mathrm{CRMS\_C6}\,(\mathrm{sfcrotC6}, \mathrm{Vcrot}, \mathrm{sfmschadC6}, \mathrm{Vmschad}, [\mathrm{C6EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KmmschadC6HydroxyacylCoAMAT}, \mathrm{KmmschadNADMAT}, [\mathrm{C6KetoacylCoAMAT}], [\mathrm{NADHMAT}], \mathrm{Keqcrot}, \mathrm{Keqmschad}, \mathrm{KmmschadC6KetoacylCoAMAT}, [\mathrm{C4AcetoacylCoAMAT}], \mathrm{KmmschadC4AcetoacylCoAMAT}, \mathrm{KmmschadNADHMAT}, [\mathrm{C4EnoylCoAMAT}], \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{vol}\,(\mathrm{VMAT})) \tag{186}$$
$$= \frac{\mathrm{CRMS}\,(\mathrm{sfcrotC6}, \mathrm{Vcrot}, \mathrm{sfmschadC6}, \mathrm{Vmschad}, [\mathrm{C6EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{Kmmscha}}{}$$

$$\mathrm{CRMS\_C6}\,(\mathrm{sfcrotC6}, \mathrm{Vcrot}, \mathrm{sfmschadC6}, \mathrm{Vmschad}, [\mathrm{C6EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KmmschadC6HydroxyacylCoAMAT}, \mathrm{KmmschadNADMAT}, [\mathrm{C6KetoacylCoAMAT}], [\mathrm{NADHMAT}], \mathrm{Keqcrot}, \mathrm{Keqmschad}, \mathrm{KmmschadC6KetoacylCoAMAT}, [\mathrm{C4AcetoacylCoAMAT}], \mathrm{KmmschadC4AcetoacylCoAMAT}, \mathrm{KmmschadNADHMAT}, [\mathrm{C4EnoylCoAMAT}], \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{vol}\,(\mathrm{VMAT})) \tag{187}$$
$$= \frac{\mathrm{CRMS}\,(\mathrm{sfcrotC6}, \mathrm{Vcrot}, \mathrm{sfmschadC6}, \mathrm{Vmschad}, [\mathrm{C6EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{Kmmscha}}{}$$

Table 147: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
`sfcrotC6`	sfcrotC6		0.83		☑
`sfmschadC6`	sfmschadC6		1.00		☑

8.37 Reaction `reaction_2`

This is a reversible reaction of two reactants forming two products influenced by eight modifiers.

Name vcrmsC4

Reaction equation

$$\text{C4EnoylCoAMAT} + \text{species\_1} \xrightleftharpoons{\text{C6KetoacylCoAMAT, C6EnoylCoAMAT, C4EnoylCoAMAT, species\_1, C4Acetoa}} \quad (188)$$

Reactants

Table 148: Properties of each reactant.

Id	Name	SBO
C4EnoylCoAMAT	C4EnoylCoAMAT	
species_1	NAD	

Modifiers

Table 149: Properties of each modifier.

Id	Name	SBO
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	
C4EnoylCoAMAT	C4EnoylCoAMAT	
species_1	NAD	
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
NADHMAT	NADHMAT	
C6KetoacylCoAMAT	C6KetoacylCoAMAT	
C6EnoylCoAMAT	C6EnoylCoAMAT	

Products

Table 150: Properties of each product.

Id	Name	SBO
C4AcetoacylCoAMAT	C4AcetoacylCoAMAT	
NADHMAT	NADHMAT	

Kinetic Law

Derived unit contains undeclared units

$$v_{37} = \mathrm{vol}\,(\mathrm{VMAT}) \cdot \mathrm{CRMS\_C4}\,(\mathrm{sfcrotC4}, \mathrm{Vcrot}, \mathrm{sfmschadC4}, \mathrm{Vmschad}, [\mathrm{C4EnoylCoAMAT}], [\mathrm{species\_1}], \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KmmschadC4HydroxyacylCoAMAT}, \mathrm{KmmschadNADMAT}, [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{NADHMAT}], \mathrm{Keqcrot}, \mathrm{Keqmschad}, \mathrm{KmmschadC4AcetoacylCoAMAT}, [\mathrm{C6KetoacylCoAMAT}], \mathrm{KmmschadC6KetoacylCoAMAT}, \mathrm{KmmschadNADHMAT}, [\mathrm{C6EnoylCoAMAT}], \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{vol}\,(\mathrm{VMAT})) \tag{189}$$

$$\mathrm{CRMS\_C4}\,(\mathrm{sfcrotC4}, \mathrm{Vcrot}, \mathrm{sfmschadC4}, \mathrm{Vmschad}, [\mathrm{C4EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KmmschadC4HydroxyacylCoAMAT}, \mathrm{KmmschadNADMAT}, [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{NADHMAT}], \mathrm{Keqcrot}, \mathrm{Keqmschad}, \mathrm{KmmschadC4AcetoacylCoAMAT}, [\mathrm{C6KetoacylCoAMAT}], \mathrm{KmmschadC6KetoacylCoAMAT}, \mathrm{KmmschadNADHMAT}, [\mathrm{C6EnoylCoAMAT}], \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{vol}\,(\mathrm{VMAT})) \tag{190}$$
$$= \frac{\mathrm{CRMS}\,(\mathrm{sfcrotC4}, \mathrm{Vcrot}, \mathrm{sfmschadC4}, \mathrm{Vmschad}, [\mathrm{C4EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{Kmmscha}}{}$$

$$\mathrm{CRMS\_C4}\,(\mathrm{sfcrotC4}, \mathrm{Vcrot}, \mathrm{sfmschadC4}, \mathrm{Vmschad}, [\mathrm{C4EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{KmmschadC4HydroxyacylCoAMAT}, \mathrm{KmmschadNADMAT}, [\mathrm{C4AcetoacylCoAMAT}], [\mathrm{NADHMAT}], \mathrm{Keqcrot}, \mathrm{Keqmschad}, \mathrm{KmmschadC4AcetoacylCoAMAT}, [\mathrm{C6KetoacylCoAMAT}], \mathrm{KmmschadC6KetoacylCoAMAT}, \mathrm{KmmschadNADHMAT}, [\mathrm{C6EnoylCoAMAT}], \mathrm{KmcrotC6EnoylCoAMAT}, \mathrm{KicrotC4AcetoacylCoA}, \mathrm{vol}\,(\mathrm{VMAT})) \tag{191}$$
$$= \frac{\mathrm{CRMS}\,(\mathrm{sfcrotC4}, \mathrm{Vcrot}, \mathrm{sfmschadC4}, \mathrm{Vmschad}, [\mathrm{C4EnoylCoAMAT}], \mathrm{NAD}, \mathrm{KmcrotC4EnoylCoAMAT}, \mathrm{Kmmscha}}{}$$

Table 151: Properties of each parameter.

Id	Name	SBO	Value	Unit	Constant
`sfcrotC4`	sfcrotC4		1.00		☑
`sfmschadC4`	sfmschadC4		0.67		☑

9 Derived Rate Equations

When interpreted as an ordinary differential equation framework, this model implies the following set of equations for the rates of change of each species.

Identifiers for kinetic laws highlighted in gray cannot be verified to evaluate to units of SBML `substance` per `time`. As a result, some SBML interpreters may not be able to verify the consistency of the units on quantities in the model. Please check if

- parameters without an unit definition are involved or

- volume correction is necessary because the `hasOnlySubstanceUnits` flag may be set to `false` and `spacialDimensions`> 0 for certain species.

9.1 Species `C16AcylCarCYT`

Name C16AcylCarCYT

Initial concentration $0.171\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in `vcactC16` and as a product in `vcpt1C16` and as a modifier in `vcpt1C16`, `vcactC16`).

$$\frac{\text{d}}{\text{d}t}\text{C16AcylCarCYT} = v_1 - v_2 \tag{192}$$

9.2 Species `C14AcylCarCYT`

Name C14AcylCarCYT

Initial concentration $0.023\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in `vcactC14` and as a modifier in `vcactC14`).

$$\frac{\text{d}}{\text{d}t}\text{C14AcylCarCYT} = -v_3 \tag{193}$$

9.3 Species `C12AcylCarCYT`

Name C12AcylCarCYT

Initial concentration $0.11\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in `vcactC12` and as a modifier in `vcactC12`).

$$\frac{\text{d}}{\text{d}t}\text{C12AcylCarCYT} = -v_4 \tag{194}$$

9.4 Species `C10AcylCarCYT`

Name C10AcylCarCYT

Initial concentration $0.019\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a reactant in `vcactC10` and as a modifier in `vcactC10`).

$$\frac{\text{d}}{\text{d}t}\text{C10AcylCarCYT} = -v_5 \tag{195}$$

9.5 Species C8AcylCarCYT

Name C8AcylCarCYT

Initial concentration $0.052\ \mu\text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in vcactC8 and as a modifier in vcactC8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C8AcylCarCYT} = -v_6 \tag{196}$$

9.6 Species C6AcylCarCYT

Name C6AcylCarCYT

Initial concentration $0.017\ \mu\text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in vcactC6 and as a modifier in vcactC6).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C6AcylCarCYT} = -v_7 \tag{197}$$

9.7 Species C4AcylCarCYT

Name C4AcylCarCYT

Initial concentration $0.0080\ \mu\text{mol} \cdot 1^{-1}$

This species takes part in two reactions (as a reactant in vcactC4 and as a modifier in vcactC4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C4AcylCarCYT} = -v_8 \tag{198}$$

9.8 Species C16AcylCoACYT

Name C16AcylCoACYT

Initial concentration $26.8\ \mu\text{mol} \cdot 1^{-1}$

Involved in rule C16AcylCoACYT

This species takes part in two reactions (as a modifier in vcpt1C16, vcpt1C16). Not these but one rule determines the species' quantity because this species is on the boundary of the reaction system.

9.9 Species CarCYT

Name CarCYT

Initial concentration $400\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a modifier in vcpt1C16, vcpt1C16, vcactC16, vcactC16, vcactC14, vcactC14, vcactC12, vcactC12, vcactC10, vcactC10, vcactC8, vcactC8, vcactC6, vcactC6, vcactC4, vcactC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{CarCYT} = 0 \tag{199}$$

9.10 Species CoACYT

Name CoACYT

Initial concentration $140\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in vcpt1C16, vcpt1C16), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{CoACYT} = 0 \tag{200}$$

9.11 Species MalCoACYT

Name MalCoACYT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in two reactions (as a modifier in vcpt1C16, vcpt1C16), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{MalCoACYT} = 0 \tag{201}$$

9.12 Species C16AcylCarMAT

Name C16AcylCarMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C16 and as a product in vcactC16 and as a modifier in vcactC16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4).

$$\frac{\text{d}}{\text{d}t}\text{C16AcylCarMAT} = v_2 - v_9 \tag{202}$$

9.13 Species C16AcylCoAMAT

Name C16AcylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 42 reactions (as a reactant in vvlcadC16, vlcadC16 and as a product in vcpt2C16 and as a modifier in vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4, vvlcadC16, vvlcadC14, vvlcadC14, vvlcadC12, vvlcadC12, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\text{d}}{\text{d}t}\text{C16AcylCoAMAT} = v_9 - v_{16} - v_{19} \tag{203}$$

9.14 Species C16EnoylCoAMAT

Name C16EnoylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 24 reactions (as a reactant in vmtpC16 and as a product in vvlcadC16, vlcadC16 and as a modifier in vvlcadC16, vvlcadC14, vvlcadC14, vvlcadC12, vvlcadC12, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\text{d}}{\text{d}t}\text{C16EnoylCoAMAT} = v_{16} + v_{19} - v_{30} \tag{204}$$

9.15 Species C16HydroxyacylCoAMAT

Name C16HydroxyacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

$$\frac{\text{d}}{\text{d}t}\text{C16HydroxyacylCoAMAT} = 0 \tag{205}$$

9.16 Species C16KetoacylCoAMAT

Name C16KetoacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a modifier in vmckatC6, vmckatC6, vmckatC4, vmckatC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{C16KetoacylCoAMAT} = 0 \tag{206}$$

9.17 Species C14AcylCarMAT

Name C14AcylCarMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C14 and as a product in vcactC14 and as a modifier in vcactC14, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C14AcylCarMAT} = v_3 - v_{10} \tag{207}$$

9.18 Species C14AcylCoAMAT

Name C14AcylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 42 reactions (as a reactant in vvlcadC14, vlcadC14 and as a product in vcpt2C14, vmtpC16 and as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4, vvlcadC16, vvlcadC16, vvlcadC14, vvlcadC12, vvlcadC12, vlcadC16, vlcadC16, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C14AcylCoAMAT} = v_{10} + v_{30} - v_{17} - v_{20} \tag{208}$$

9.19 Species C14EnoylCoAMAT

Name C14EnoylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 24 reactions (as a reactant in vmtpC14 and as a product in vvlcadC14, vlcadC14 and as a modifier in vvlcadC16, vvlcadC16, vvlcadC14, vvlcadC12, vvlcadC12, vlcadC16, vlcadC16, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmtpC16, vmtpC16, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C14EnoylCoAMAT} = v_{17} + v_{20} - v_{31} \tag{209}$$

9.20 Species C14HydroxyacylCoAMAT

Name C14HydroxyacylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C14HydroxyacylCoAMAT} = 0 \tag{210}$$

9.21 Species C14KetoacylCoAMAT

Name C14KetoacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a modifier in vmckatC6, vmckatC6, vmckatC4, vmckatC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{C14KetoacylCoAMAT} = 0 \tag{211}$$

9.22 Species C12AcylCarMAT

Name C12AcylCarMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C12 and as a product in vcactC12 and as a modifier in vcactC12, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4).

$$\frac{\text{d}}{\text{d}t}\text{C12AcylCarMAT} = v_4 - v_{11} \tag{212}$$

9.23 Species C12AcylCoAMAT

Name C12AcylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 50 reactions (as a reactant in vvlcadC12, vlcadC12, vmcadC12 and as a product in vcpt2C12, vmtpC14 and as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4, vvlcadC16, vvlcadC16, vvlcadC14, vvlcadC14, vvlcadC12, vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC10, vlcadC10, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\text{d}}{\text{d}t}\text{C12AcylCoAMAT} = v_{11} + v_{31} - v_{18} - v_{21} - v_{23} \tag{213}$$

9.24 Species C12EnoylCoAMAT

Name C12EnoylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 31 reactions (as a reactant in vmtpC12 and as a product in vvlcadC12, vlcadC12, vmcadC12 and as a modifier in vvlcadC16, vvlcadC16, vvlcadC14, vvlcadC14, vvlcadC12, vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC10, vlcadC10, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C12EnoylCoAMAT} = v_{18} + v_{21} + v_{23} - v_{32} \tag{214}$$

9.25 Species C12HydroxyacylCoAMAT

Name C12HydroxyacylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C12HydroxyacylCoAMAT} = 0 \tag{215}$$

9.26 Species C12KetoacylCoAMAT

Name C12KetoacylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in four reactions (as a modifier in vmckatC6, vmckatC6, vmckatC4, vmckatC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C12KetoacylCoAMAT} = 0 \tag{216}$$

9.27 Species C10AcylCarMAT

Name C10AcylCarMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C10 and as a product in vcactC10 and as a modifier in vcactC10, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C10AcylCarMAT} = v_5 - v_{12} \tag{217}$$

9.28 Species C10AcylCoAMAT

Name C10AcylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 44 reactions (as a reactant in vlcadC10, vmcadC10 and as a product in vcpt2C10, vmtpC12 and as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4, vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vmcadC12, vmcadC12, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C10AcylCoAMAT} = v_{12} + v_{32} - v_{22} - v_{24} \tag{218}$$

9.29 Species C10EnoylCoAMAT

Name C10EnoylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 26 reactions (as a reactant in vmtpC10 and as a product in vlcadC10, vmcadC10 and as a modifier in vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vmcadC12, vmcadC12, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C10EnoylCoAMAT} = v_{22} + v_{24} - v_{33} \tag{219}$$

9.30 Species C10HydroxyacylCoAMAT

Name C10HydroxyacylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C10HydroxyacylCoAMAT} = 0 \tag{220}$$

9.31 Species C10KetoacylCoAMAT

Name C10KetoacylCoAMAT

Initial concentration $0\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in four reactions (as a modifier in vmckatC6, vmckatC6, vmckatC4, vmckatC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{C10KetoacylCoAMAT} = 0 \tag{221}$$

9.32 Species C8AcylCarMAT

Name C8AcylCarMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C8 and as a product in vcactC8 and as a modifier in vcactC8, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4).

$$\frac{\text{d}}{\text{d}t}\text{C8AcylCarMAT} = v_6 - v_{13} \tag{222}$$

9.33 Species C8AcylCoAMAT

Name C8AcylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 44 reactions (as a reactant in vmcadC8 and as a product in vcpt2C8, vmtpC10 and as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4, vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC6, vmcadC6, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC8, vmtpC8).

$$\frac{\text{d}}{\text{d}t}\text{C8AcylCoAMAT} = v_{13} + v_{33} - v_{25} \tag{223}$$

9.34 Species C8EnoylCoAMAT

Name C8EnoylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 26 reactions (as a reactant in vmtpC8 and as a product in vmcadC8 and as a modifier in vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC6, vmcadC6, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8).

$$\frac{\text{d}}{\text{d}t}\text{C8EnoylCoAMAT} = v_{25} - v_{34} \tag{224}$$

9.35 Species C8HydroxyacylCoAMAT

Name C8HydroxyacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

$$\frac{\text{d}}{\text{d}t}\text{C8HydroxyacylCoAMAT} = 0 \tag{225}$$

9.36 Species C8KetoacylCoAMAT

Name C8KetoacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a modifier in vmckatC6, vmckatC6, vmckatC4, vmckatC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{C8KetoacylCoAMAT} = 0 \tag{226}$$

9.37 Species C6AcylCarMAT

Name C6AcylCarMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C6 and as a product in vcactC6 and as a modifier in vcactC6, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C4, vcpt2C4).

$$\frac{\text{d}}{\text{d}t}\text{C6AcylCarMAT} = v_7 - v_{14} \tag{227}$$

9.38 Species C6AcylCoAMAT

Name C6AcylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 38 reactions (as a reactant in vmcadC6 and as a product in vcpt2C6, vmtpC8 and as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C4, vcpt2C4, vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vscadC4, vscadC4, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8).

$$\frac{\text{d}}{\text{d}t}\text{C6AcylCoAMAT} = v_{14} + v_{34} - v_{26} \tag{228}$$

9.39 Species C6EnoylCoAMAT

Name C6EnoylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in reaction_1 and as a product in vmcadC6 and as a modifier in vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vscadC4, vscadC4, reaction_1, reaction_2, reaction_2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{C6EnoylCoAMAT} = v_{26} - v_{36} \tag{229}$$

9.40 Species C6HydroxyacylCoAMAT

Name C6HydroxyacylCoAMAT

Initial concentration $0\ \mu\mathrm{mol}\cdot\mathrm{l}^{-1}$

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{C6HydroxyacylCoAMAT} = 0 \tag{230}$$

9.41 Species C6KetoacylCoAMAT

Name C6KetoacylCoAMAT

Initial concentration $0\ \mu\mathrm{mol}\cdot\mathrm{l}^{-1}$

This species takes part in eight reactions (as a reactant in vmckatC6 and as a product in reaction_1 and as a modifier in vmckatC6, vmckatC4, vmckatC4, reaction_1, reaction_2, reaction_2).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{C6KetoacylCoAMAT} = v_{36} - v_{28} \tag{231}$$

9.42 Species C4AcylCarMAT

Name C4AcylCarMAT

Initial concentration $0\ \mu\mathrm{mol}\cdot\mathrm{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vcpt2C4 and as a product in vcactC4 and as a modifier in vcactC4, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4).

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{C4AcylCarMAT} = v_{8} - v_{15} \tag{232}$$

9.43 Species C4AcylCoAMAT

Name C4AcylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 28 reactions (as a reactant in vscadC4 and as a product in vcpt2C4, vmckatC6 and as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vscadC4, vmckatC6, vmckatC4, vmckatC4).

$$\frac{\text{d}}{\text{d}t}\text{C4AcylCoAMAT} = v_{15} + v_{28} - v_{27} \tag{233}$$

9.44 Species C4EnoylCoAMAT

Name C4EnoylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 14 reactions (as a reactant in reaction_2 and as a product in vscadC4 and as a modifier in vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vscadC4, reaction_1, reaction_1, reaction_2).

$$\frac{\text{d}}{\text{d}t}\text{C4EnoylCoAMAT} = v_{27} - v_{37} \tag{234}$$

9.45 Species C4HydroxyacylCoAMAT

Name C4HydroxyacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

$$\frac{\text{d}}{\text{d}t}\text{C4HydroxyacylCoAMAT} = 0 \tag{235}$$

9.46 Species C4AcetoacylCoAMAT

Name C4AcetoacylCoAMAT

Initial concentration $0\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in 18 reactions (as a reactant in vmckatC4 and as a product in reaction_2 and as a modifier in vmckatC6, vmckatC6, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8, reaction_1, reaction_1, reaction_2).

$$\frac{\text{d}}{\text{d}t}\text{C4AcetoacylCoAMAT} = v_{37} - v_{29} \tag{236}$$

9.47 Species AcetylCoAMAT

Name AcetylCoAMAT

Initial concentration $30\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 16 reactions (as a reactant in vacesink and as a product in vmckatC6, vmckatC4, vmtpC16, vmtpC14, vmtpC12, vmtpC10, vmtpC8 and as a modifier in vmckatC6, vmckatC4, vmtpC16, vmtpC14, vmtpC12, vmtpC10, vmtpC8, vacesink).

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{AcetylCoAMAT} = v_{28} + 2\,v_{29} + v_{30} + v_{31} + v_{32} + v_{33} + v_{34} - v_{35} \tag{237}$$

9.48 Species FADHMAT

Name FADHMAT

Initial concentration $0.46\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 24 reactions (as a product in vvlcadC16, vvlcadC14, vvlcadC12, vlcadC16, vlcadC14, vlcadC12, vlcadC10, vmcadC12, vmcadC10, vmcadC8, vmcadC6, vscadC4 and as a modifier in vvlcadC16, vvlcadC14, vvlcadC12, vlcadC16, vlcadC14, vlcadC12, vlcadC10, vmcadC12, vmcadC10, vmcadC8, vmcadC6, vscadC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{FADHMAT} = 0 \tag{238}$$

9.49 Species NADHMAT

Name NADHMAT

Initial concentration $16\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 14 reactions (as a product in vmtpC16, vmtpC14, vmtpC12, vmtpC10, vmtpC8, reaction_1, reaction_2 and as a modifier in vmtpC16, vmtpC14, vmtpC12, vmtpC10, vmtpC8, reaction_1, reaction_2), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\text{NADHMAT} = 0 \tag{239}$$

9.50 Species CoAMAT

Name CoAMAT

Initial concentration $4970\ \mu\text{mol}\cdot\text{l}^{-1}$

Involved in rule CoAMAT

This species takes part in 28 reactions (as a modifier in vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4, vmckatC6, vmckatC6, vmckatC4, vmckatC4, vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8). Not these but one rule determines the species' quantity because this species is on the boundary of the reaction system.

9.51 Species CarMAT

Name CarMAT

Initial concentration $950\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 28 reactions (as a modifier in vcactC16, vcactC16, vcactC14, vcactC14, vcactC12, vcactC12, vcactC10, vcactC10, vcactC8, vcactC8, vcactC6, vcactC6, vcactC4, vcactC4, vcpt2C16, vcpt2C16, vcpt2C14, vcpt2C14, vcpt2C12, vcpt2C12, vcpt2C10, vcpt2C10, vcpt2C8, vcpt2C8, vcpt2C6, vcpt2C6, vcpt2C4, vcpt2C4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{CarMAT} = 0 \tag{240}$$

9.52 Species FADtMAT

Name FADtMAT

Initial concentration $0.77\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in 24 reactions (as a modifier in vvlcadC16, vvlcadC16, vvlcadC14, vvlcadC14, vvlcadC12, vvlcadC12, vlcadC16, vlcadC16, vlcadC14, vlcadC14, vlcadC12, vlcadC12, vlcadC10, vlcadC10, vmcadC12, vmcadC12, vmcadC10, vmcadC10, vmcadC8, vmcadC8, vmcadC6, vmcadC6, vscadC4, vscadC4), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{FADtMAT} = 0 \tag{241}$$

9.53 Species NADtMAT

Name NADtMAT

Initial concentration $250\ \mu\text{mol}\cdot\text{l}^{-1}$

This species takes part in ten reactions (as a modifier in vmtpC16, vmtpC16, vmtpC14, vmtpC14, vmtpC12, vmtpC12, vmtpC10, vmtpC10, vmtpC8, vmtpC8), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\mathrm{d}}{\mathrm{d}t}\mathrm{NADtMAT} = 0 \tag{242}$$

9.54 Species CoAMATt

Name CoAMATt

Initial concentration $5000\ \mu\text{mol} \cdot \text{l}^{-1}$

$$\frac{\text{d}}{\text{d}t}\text{CoAMATt} = 0 \tag{243}$$

9.55 Species species_1

Name NAD

Initial concentration $234\ \mu\text{mol} \cdot \text{l}^{-1}$

This species takes part in four reactions (as a reactant in reaction_1, reaction_2 and as a modifier in reaction_1, reaction_2), which do not influence its rate of change because this constant species is on the boundary of the reaction system:

$$\frac{\text{d}}{\text{d}t}\text{species\_1} = 0 \tag{244}$$

SBML2LaTeX was developed by Andreas Dräger[a], Hannes Planatscher[a], Dieudonné M Wouamba[a], Adrian Schröder[a], Michael Hucka[b], Lukas Endler[c], Martin Golebiewski[d] and Andreas Zell[a]. Please see http://www.ra.cs.uni-tuebingen.de/software/SBML2LaTeX for more information.

[a]Center for Bioinformatics Tübingen (ZBIT), Germany
[b]California Institute of Technology, Beckman Institute BNMC, Pasadena, United States
[c]European Bioinformatics Institute, Wellcome Trust Genome Campus, Hinxton, United Kingdom
[d]EML Research gGmbH, Heidelberg, Germany