Compartment volumes

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Asterisks before titles (*) indicate junctures at which decisions were made or the kinetic implication of a certain set of data disregarded.

APPROACH

The compartment volumes were selected after a literature search and comparison to the rat liver model published by Van Eunen *et al.* (1).

Weighting rule

I give the parameters weights based on my subjective evaluation. There will be four categories.

1 = credible measurement

0.9 = just short of perfect (e.g. wrong tissue and had to be adjusted, 30°C instead of 37°C)

0.5 = uncertain

0.1 = “I probably wouldn’t choose this if I had another option”

Using the weights, I will reduce the impact of poor measurements.

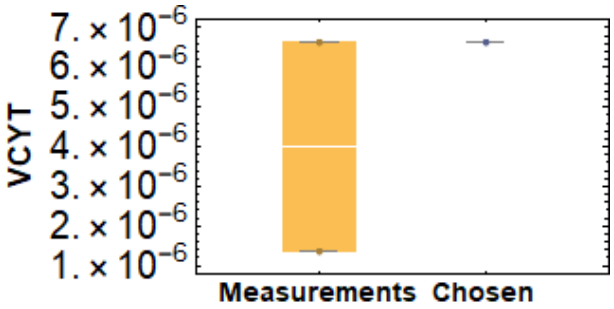
Weights are given in curly brackets next to parameter values: {} with short reasons

A NOTE ON THE BOUNDARY CONDITIONS

The boundary conditions, conserved moieties, and compartment volumes are not varied. If I am interested in the contributions of these parameters, I might vary them systematically later on.

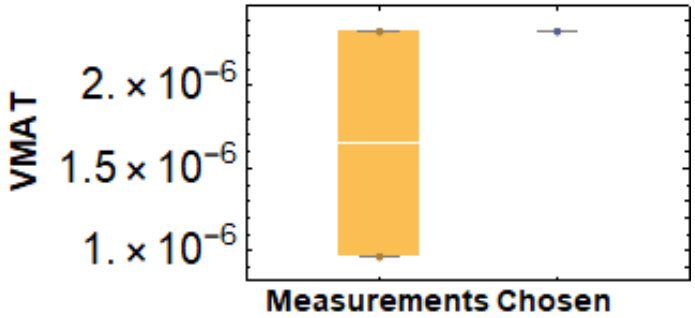
	Unit	Van Eunen *et al.* (1) - rat	Odendaal suggested - human		Reference Van Eunen *et al.* (1)	Reference Odendaal suggested	Remarks
			selected	mammalian range			
VMAT	L.mg-mitochondrial-protein^{-1}	2.20E-06	2.33E-06	[0.97 - 2.33] *{0.5, source and appropriateness of conditions not entirely certain}*	Gear AR & Bednarek JM (1972, (2))	Halestrap, A. P. (1989, (3))	*Van Eunen:* the original source of these volumes is unclear, but it is likely that cytosolic volume here is expressed in terms of cytosolic protein, whereas the Vmax of the sole cytosolic enzyme, CPT1, is expressed in terms of mitochondrial protein, and is is the Vmaxes that are converted to concentration changes by the volume factors. *Odendaal:* **mammalian,** the also changes with nutritional condition, cytosolic volume **scaled to mitochondrial protein** (25% cellular protein) according to Wiśniewski *et al.* (4); **we selected the values measured in crude cells (*untreated*) with sucrose as filling agent.**
VCYT	L.mg-mitochondrial-protein^{-1}	1.80E-06	6.64E-06	[1.36 - 6.64] *{0.5, source and appropriateness of conditions not entirely certain}*	Stoll B, Gerok W, Lang F & Häussinger D (1992, (Stoll et al., 1992))		

Unique	
Values	6.64*10^-6



Comments: No variation allowed.

Unique	
Values	2.33*10^-6



Comments: No variation allowed.

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