Now we assign values to the parameters

```
Param = (  θ = [1.5,  #Ka
                1.1,  #CL
                20.0,  #V
                eps(), # lags2
                1, #Bioav
                0.5, # isPM CL
                eps() # duration
                ],
           Ω = Diagonal([0.04,0.04]),
           σ_prop = 0.04
         )
```

We run the simulation with a simobs call

```
julia> sim1 = simobs(m_diffeq, ev1, p; abstol=1e-14, reltol=1e-14)
```

We get the subject wise simulation output

```
Subject
  ID: 1
  Events: 4
, 0.0:1.0:96.0, (cp = [4114.33, 4057.56, 4001.57, 3946.35, 3891.9, 3838.2, 3785.24, 3733.0,
3681.5, 3630.7  …  8676.2, 8556.49, 8438.42, 8321.98, 8207.15, 8093.91, 7982.22, 7872.08,
7763.46, 7656.33], dv = [3254.99, 1998.61, 3497.23, 4780.26, 3041.26, 2604.17, 3277.17,
3295.85, 4776.44, 3386.44  …  8335.86, 8939.89, 10491.5, 7646.75, 7337.47, 8872.07, 5317.99,
6404.97, 7250.41, 9919.32]))
```

Let’s take a look at the dataframe of the simulation

```
julia> simdf1 = DataFrame(sim1)
2424×10 DataFrame
```

Row	id	time	cp	dv	amt	evid	cmt	rate	isPM	Wt
	String	Float64	Float64	Float64	Float64	Int8	Int64⍰	Float64	String	Int64
1	1	0.0	3021.8	2659.35	100.0	1	1	0.0	no	62
2	1	0.0	3021.8	2659.35	0.0	0	missing	0.0	no	62
3	1	1.0	2964.28	2650.0	0.0	0	missing	0.0	no	62
4	1	2.0	2907.87	4645.14	0.0	0	missing	0.0	no	62
5	1	3.0	2852.52	3019.46	0.0	0	missing	0.0	no	62
6	1	4.0	2798.24	3301.3	0.0	0	missing	0.0	no	62
7	1	5.0	2744.98	2584.11	0.0	0	missing	0.0	no	62
8	1	6.0	2692.74	2720.58	0.0	0	missing	0.0	no	62
9	1	7.0	2641.49	2994.18	0.0	0	missing	0.0	no	62
10	1	8.0	2591.21	2713.43	0.0	0	missing	0.0	no	62

We have the derived variables, the dosage regimen and the covariates in the dataframe.

Let’s plot the simulation.