

**Nonlinear Regression**

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**Data Source:** Data 2 in Octil, PEI e Treolase Cinética**Equation:** Single Substrate; Michaelis-Menten in enzyme kinetics

$$v = V_{\max} * S / (K_m + S)$$

<b>R</b>	<b>Rsqr</b>	<b>Adj Rsqr</b>	<b>Standard Error of Estimate</b>
0,9709	0,9427	0,9345	0,0823

	<b>Coefficient</b>	<b>Std. Error</b>	<b>t</b>	<b>P</b>
Vmax	2,3849	0,8893	2,6817	0,0315
Km	1,3820	0,7529	1,8356	0,1090

**Analysis of Variance:**

	<b>DF</b>	<b>SS</b>	<b>MS</b>
Regression	2	3,1525	1,5763
Residual	7	0,0474	0,0068
Total	9	3,1999	0,3555

Corrected for the mean of the observations:

	<b>DF</b>	<b>SS</b>	<b>MS</b>	<b>F</b>	<b>P</b>
Regression	1	0,7790	0,7790	115,1320	<0,0001
Residual	7	0,0474	0,0068		
Total	8	0,8264	0,1033		

**Statistical Tests:**
**Normality Test (Shapiro-Wilk)** Passed (P = 0,0002)

W Statistic= 0,6260 Significance Level = &lt;0,0001

**Constant Variance Test** Passed (P = 0,0428)
**Fit Equation Description:**

[Variables]

S = col(6)

V = col(7)

' Weighting Functions

reciprocal\_V = if(V &lt;= 0; 0/0; 1/V)

reciprocal\_Vsquare = if(V &lt;= 0; 0/0; 1/V^2)

[Parameters]

Vmax = max(V)\*2 "Auto {{previous: 2,38492}}

Km = x50(S;V;0,1) "Auto {{previous: 1,38197}}

[Equation]

v = Vmax\*S/(Km+S)

fit v to V

"fit v to V with weight reciprocal\_V

"fit v to V with weight reciprocal\_Vsquare

[Constraints]

Vmax &gt; 0

Km &gt; 0

[Options]  
tolerance=0,00001  
stepsize=1  
iterations=200

Number of Iterations Performed = 10