

Enzyme Kinetics

Biology

Michaelis-Menten, and what K_m and V_{max} actually tell you.

Reaction rate rises with substrate concentration until the enzyme is saturated.

$$v = (V_{max} \times [S]) \div (K_m + [S])$$

Low K_m

Saturates at low concentration.

High affinity for substrate

High K_m

Needs more substrate.

Low affinity

V_{max}

Limited by enzyme concentration.

Rate when fully saturated

THE COMMON MISTAKE

✗ **Reading K_m as a rate**

✓ **K_m is a concentration**

It has units of concentration, not of rate. It measures affinity, not speed.

Competitive inhibitors raise K_m and leave V_{max} unchanged.
Non-competitive inhibitors lower V_{max} and leave K_m unchanged.