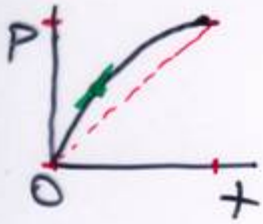
CINETICA ENZIMATICA

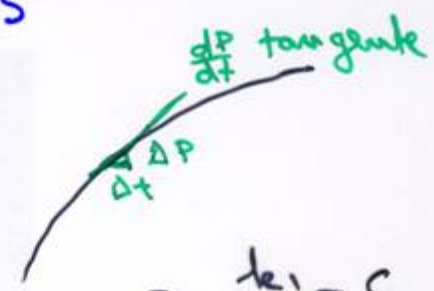
velocidad de reacción

$$S \xrightarrow{E} P$$

sustrato → producto

$$v = \frac{P}{t} = \frac{\Delta P}{\Delta t} = \frac{dP}{dt} = k S$$





$$A + B \xrightarrow{k_1} C$$

$$v = k_1 A B$$

Cinética Enzimática

Henri

$$S + E \longrightarrow E + P$$

$$E + S \underset{k_{-1}}{\overset{k_1}{\rightleftharpoons}} ES \xrightarrow{k} E + P$$

(e) (s) — (es) — (e) (p)

$S \xrightarrow{E} P$

Complejo ES

Michaelis y Menten

equilibrio

$$(e)(s)\,k_1 = (es)\,k_{-1}$$

$$\left[\frac{(e)(s)}{(es)} = \frac{k_{-1}}{k_1} = Km\right]$$

ct. de Michaelis, ct. de disociación

$$v = (es)\,k$$

Balance de enzima

$$(e_0) = (e) + (es)$$

$$(e) = \frac{K_m (es)}{(s)}$$

$$(e_0) = \frac{K_m (es)}{(s)} + (es) = (es)\left(1 + \frac{K_m}{s}\right)$$

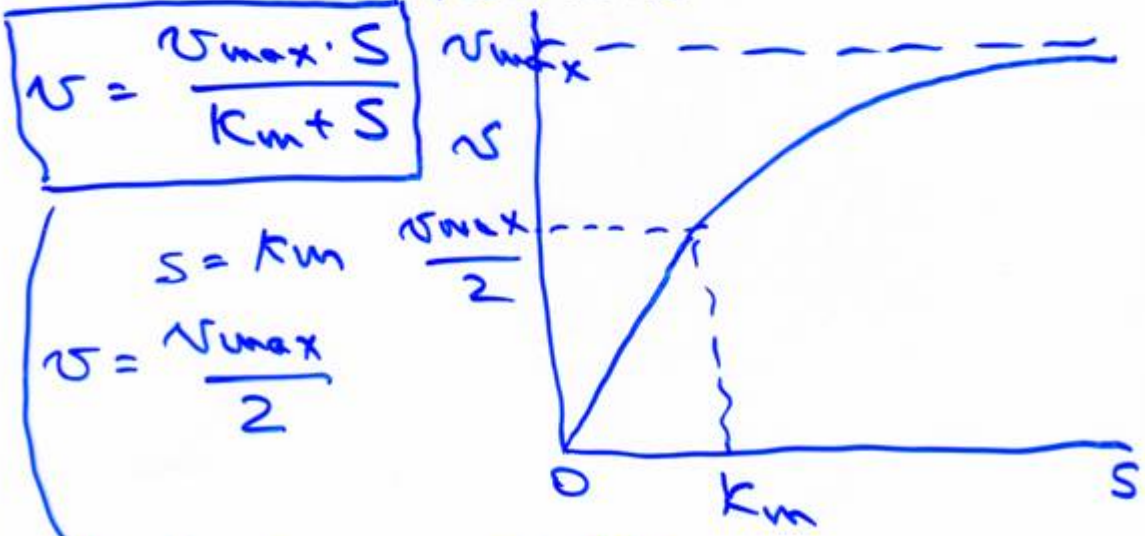
$$(es) = \frac{e_0}{1 + \frac{K_m}{s}}$$

$$v = (es)\, k = \frac{k e_0}{1 + \frac{K_m}{s}} \times \frac{s}{s} \Rightarrow v = \frac{\overbrace{k e_0}^{V_{max}}\, s}{K_m + s}$$

$$V_{max} = k e_0$$

Ecuación de Michaelis - Menten

$$\boxed{v = \frac{V_{max} \cdot S}{K_m + S}}$$

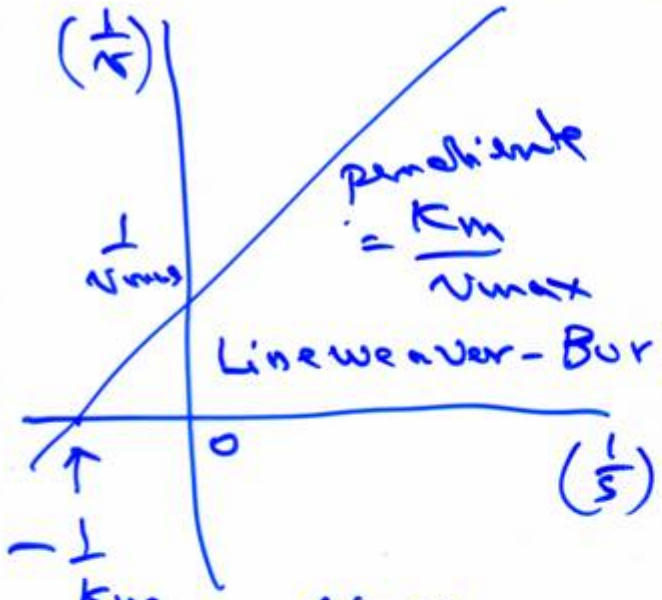


$s = K_m$

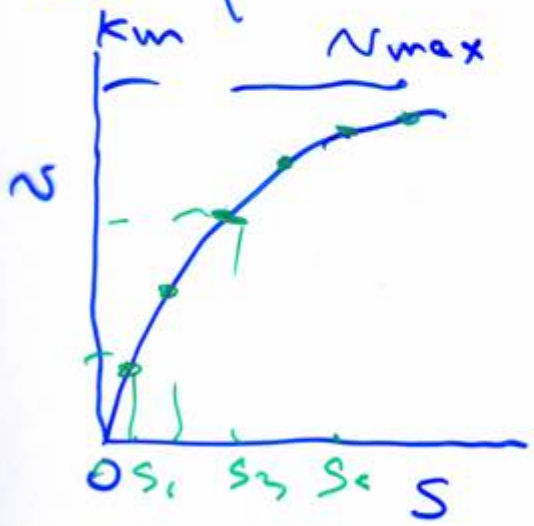
$$v = \frac{V_{max}}{2}$$

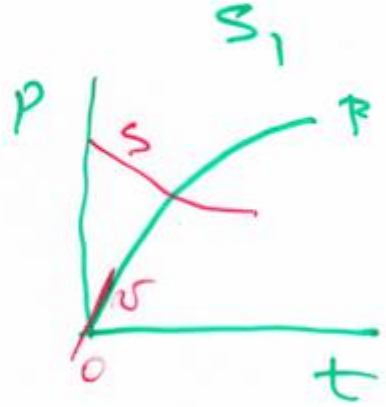
→ la damos vuelta

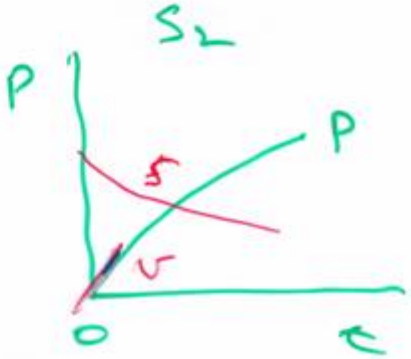
$$\frac{1}{v} = \frac{S}{S \cdot V_{max}} + \frac{K_m}{V_{max} \cdot S} = \frac{1}{V_{max}} + \frac{K_m}{V_{max}} \cdot \frac{1}{S} \quad (1)$$



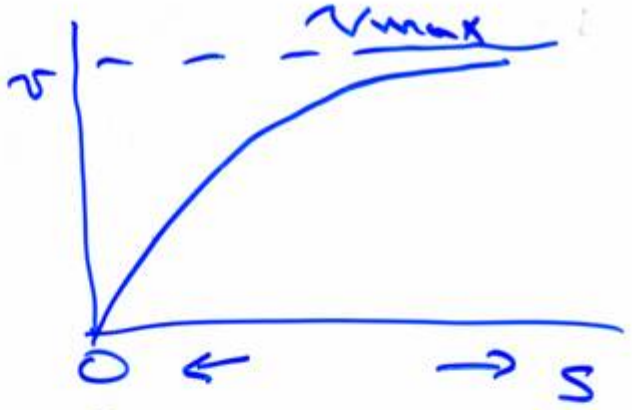
v	S	1/v	1/S







$$v = \frac{V_{max} \cdot S}{K_m + S}$$



$S << K_m$

$$v = \frac{V_{max} \cdot S}{K_m}$$

1er orden

$$v = \frac{V_{max}}{K_m} \cdot S$$

$S >> K_m$

$$v = \frac{V_{max} \cdot S}{S} = V_{max}$$

$V_{max} = k \cdot [E]_0$

sitio activo

"llave y cerradura"

Inhibición