

Enzyme kinetic mechanisms for derivation of rate equations

FOR DERIVATION:

forward direction: $\text{Pyr} + \text{NADH} \rightarrow \text{Lac} + \text{NAD}$

S1 = Pyr

S2 = NADH

P1 = Lac

P2 = NAD

1A - Ordered with cofactor binding first; Pyr inhibitor binds to all enzyme complexes

1B - Ordered with cofactor binding first; Pyr inhibitor binds to all enzyme complexes with both catalytic sites occupied

1C - Random Order; Pyr inhibitor binds to all enzyme complexes that already have Pyr bound in the catalytic site

1D - Ordered with cofactor binding first; Pyr inhibitor binds to all enzyme complexes that already have Pyr bound in the catalytic site

2A - Random Order; Pyr inhibitor binds to all enzyme complexes. (substrate NAD, product NADH)

2B - Ordered with carbon substrate/product binding first; Pyr inhibitor binds to all enzyme complexes with both catalytic sites occupied

2C - Random Order; Pyr inhibitor binds to all enzyme complexes with both catalytic sites occupied

2D - Ordered with carbon substrate/product binding first; Pyr inhibitor binds to all enzyme complexes

FOR ALL GROUPS: Assume Lac binds to all complexes as an allosteric inhibitor.