Qeios

Peer Review

Review of: "The Steady State Approximation in Enzyme Kinetics: Reflections in Its Centennial Year"

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I must confess I do not understand the author.

For a reversible reaction, the only reasonable minimal scheme is scheme 2. There is no reason to assume that k_{-3} is equal to k_1. Moreover, if the forward reaction rate is measured with [P] = 0, there is no reason for k_{-3} to appear in the equations.

A rigorous analysis with [P] = 0 yields;

$k_{cat}^{A} = k_2k_3/(k_{-2} + k_2 + k_3)$

and

$K_m^{A} = (k_{-1}k_{-2} + k_{-1}k_3 + k_2k_3)/k_1(k_{-2} + k_2 + k_3)$

These equations are different from those given by the author.

Note that if one assumes that k_{-3} is equal to k_1, the K_m^{A} value of the author's simplifies to k_3/k_1.

Alternatively, I might have completely misunderstood the author's approach.

Declarations

Potential competing interests: No potential competing interests to declare.

doi.org/10.32388/PQ43KI