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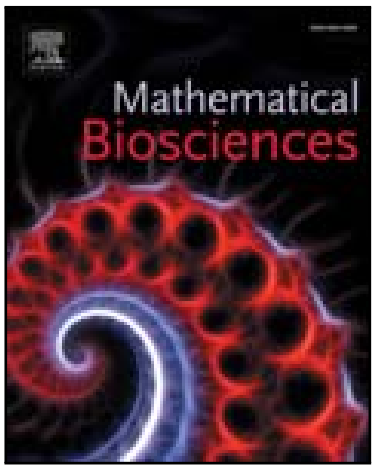

Michaelis - Menten equation for degradation of insoluble substrate

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Highlights

- Insoluble substrate implies need for kinetic theory of enzyme-substrate interactions.
- A simple, biochemically motivated model is proposed, where enzymatic degradation of substrate at the interface makes substrate at the bulk accessible.
- Closed form, time dependent solutions are derived, valid for all initial conditions and rate constants.
- The model merge with the Michaelis Menten equation and the reverse Michaelis Menten equation in case of respectively substrate excess and enzyme excess.
- Parameter estimation and experimental setup is analyzed, showing how all parameters can be reliably estimated.

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