

# A STATISTICAL INFERENCE FOR ENZYME KINETICS

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## ABSTRACT

In this research, we propose a statistical estimation of the enzyme kinetics model. Michaelis-Menten equation derived using the standard quasi steady-state approximation (sQSSA) has been widely used for the estimation of enzyme kinetic parameters. [1] However, such approximation is only valid when enzyme concentrations are low. Thus, we found that the estimation can be biased when enzyme concentration is high. On the other hand, we found that a newly reduced model using the total QSSA (tQSSA) provides the accurate estimation of parameters regardless of enzyme concentration. For the estimation of parameters, we utilized the Markov Chain Monte Carlo (MCMC) based on the Bayesian approach to estimate parameter using non-informative and informative priors. [2]

## REFERENCES

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2. Choi, B., Rempala, G. A. and Jae Kyoung Kim, "Beyond the Michaelis-Menten equation: Accurate and efficient estimation of enzyme kinetic parameters", *Scientific Reports*, 05 December 2015.