ABSTRACT

In statistical analysis, investigation of the posterior distribution is one of the topics that statisticians are interested in. It is known that given tractable likelihoods, posterior distribution is proportional to the product of the likelihood and prior. While under the situation where the likelihood is intractable, sampling methods can be used to approximate the posterior distribution. In this paper, basic Approximate Bayesian Computation algorithms using Rejection Sampling and Markov Chain Monte Carlo (MCMC) are discussed. Besides, papers about improving the accuracy in estimating posterior by semi-automatic ABC, and comparison between Rejection ABC and MCMC ABC with an example concerning population genetics are reviewed. Additionally, an example with uniform prior and normal mixture likelihood is conducted by Rejection ABC to show the impacts of different thresholds, as well as to investigate the impacts of including N trials in Rejection ABC. Finally, the results support that small values of threshold will result in a more accurate posterior estimation but the price paid is low acceptance rate and long computation period.