



Comparison of Methylene Blue and Rhodamine B Adsorption Efficiencies of Base-Modified Banana Pseudo Stem Biomass (BPSB)

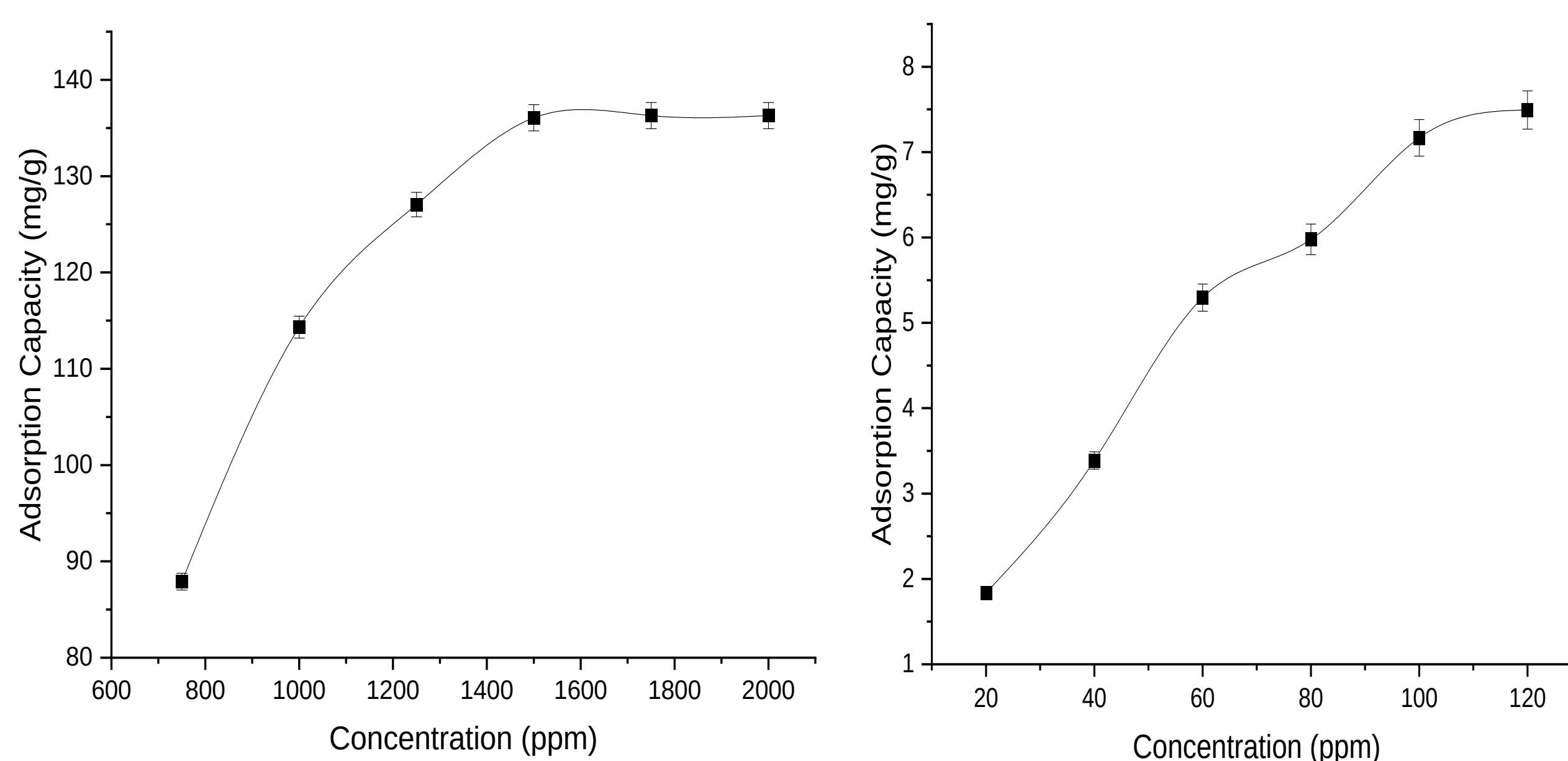
Sithumi Yaddehige, Udaya K. Jayasundara
Department of Chemistry, Institute of Chemistry Ceylon, Sri Lanka.

Introduction

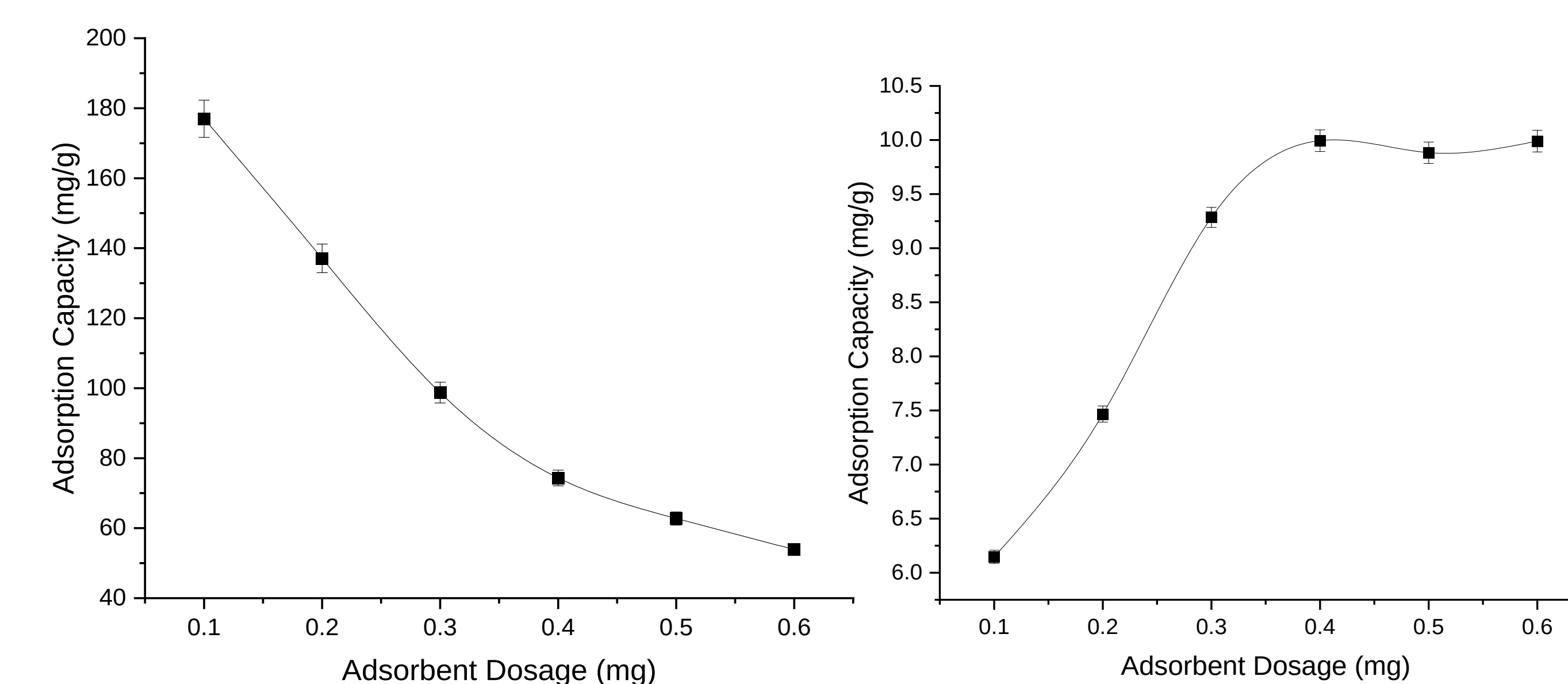
- Releasing industrial dyes to the water bodies is a global issue.
- Some conventional methods are available to remove dyes but adsorption using biomass is the most profitable and eco-friendly method.
- To enhance the adsorption efficiency, base-modified BPSB is used as the adsorbent with different physicochemical parameters. (concentration, dosage, time)

Results & Discussion

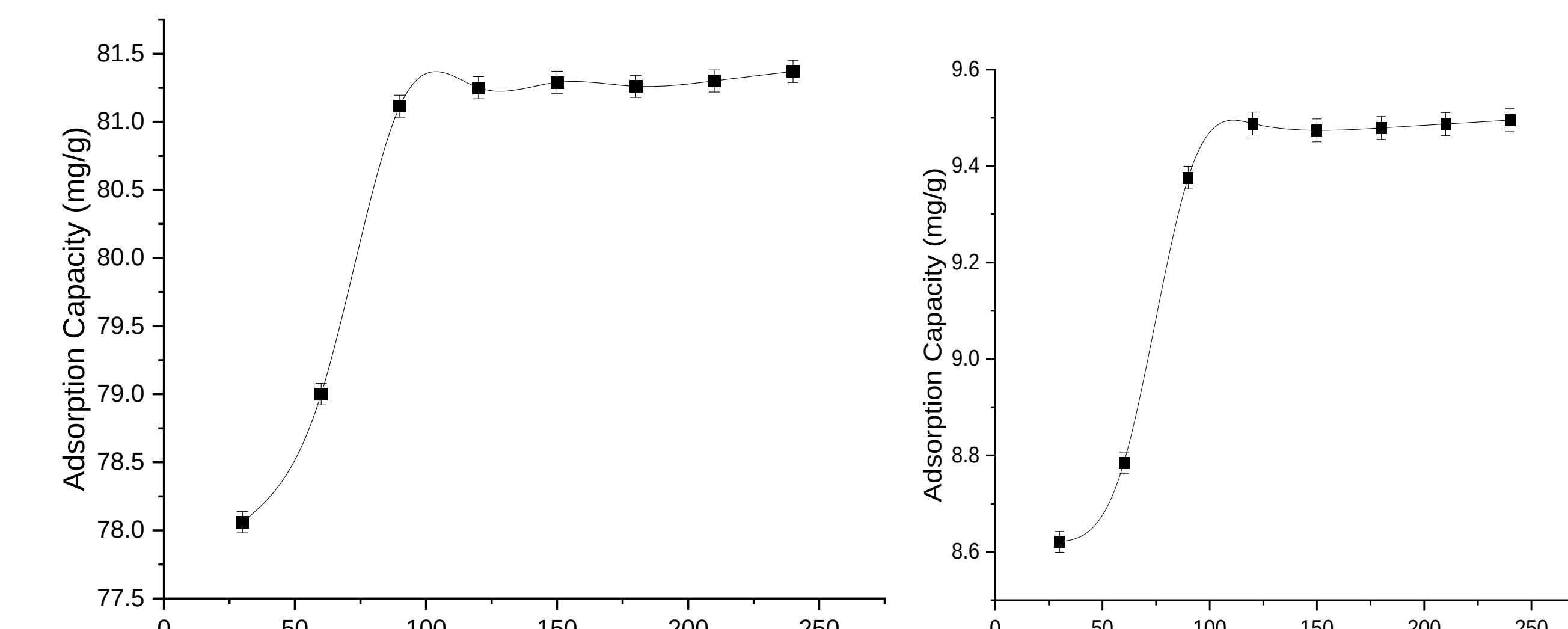
1. Concentration Optimization



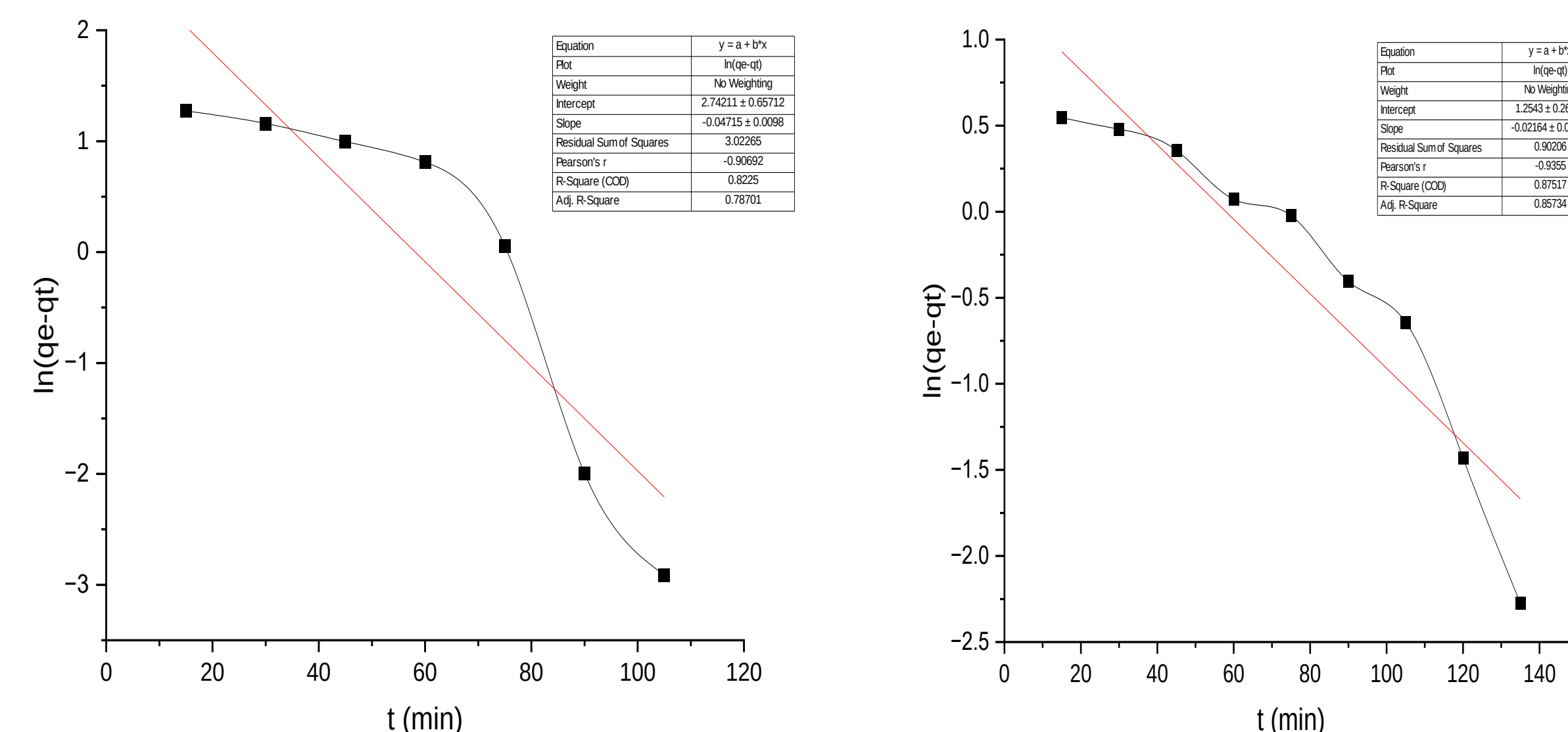
2. Dosage Optimization



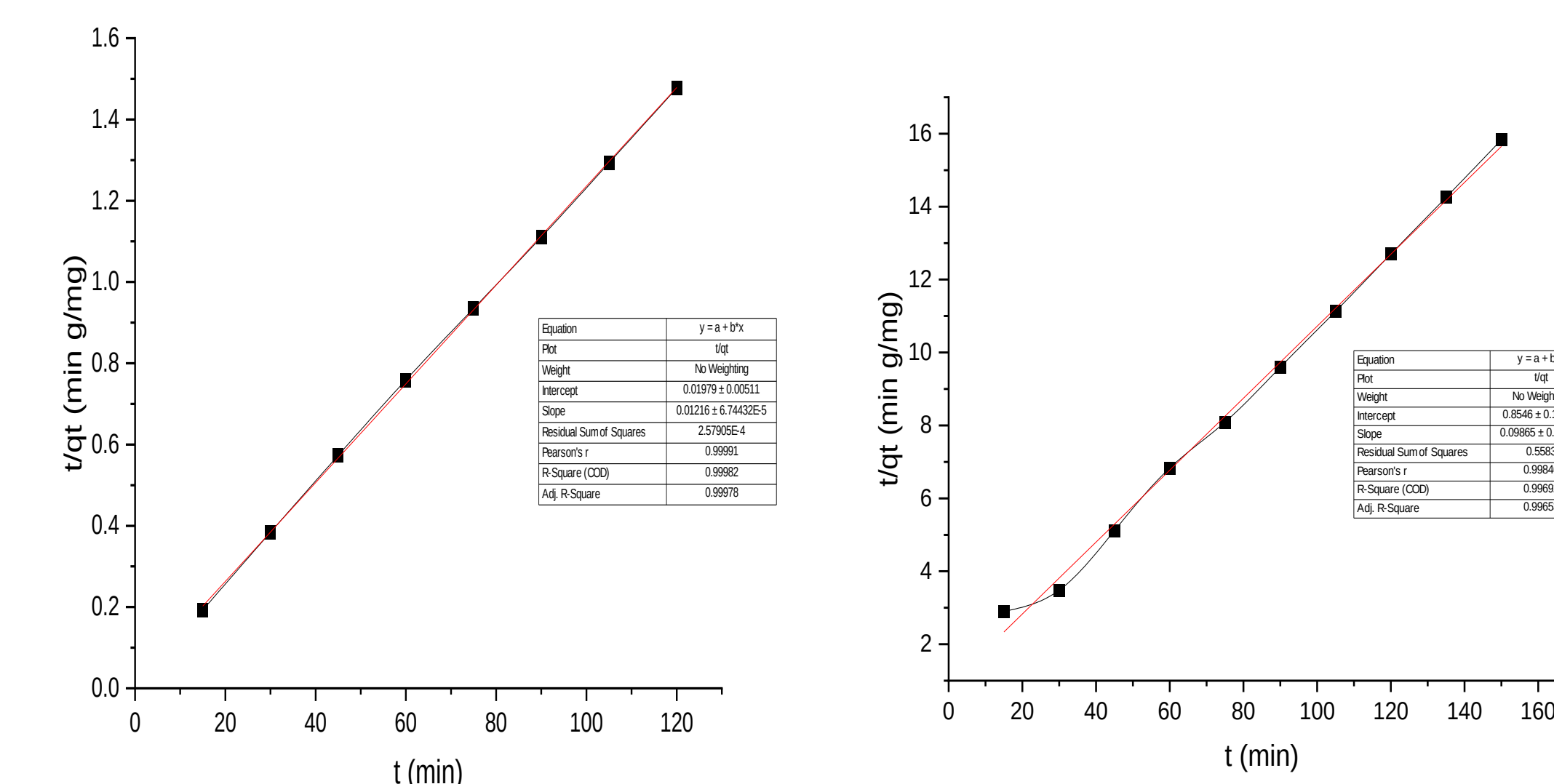
3. Time Optimization



4. Pseudo 1st Order Kinetics



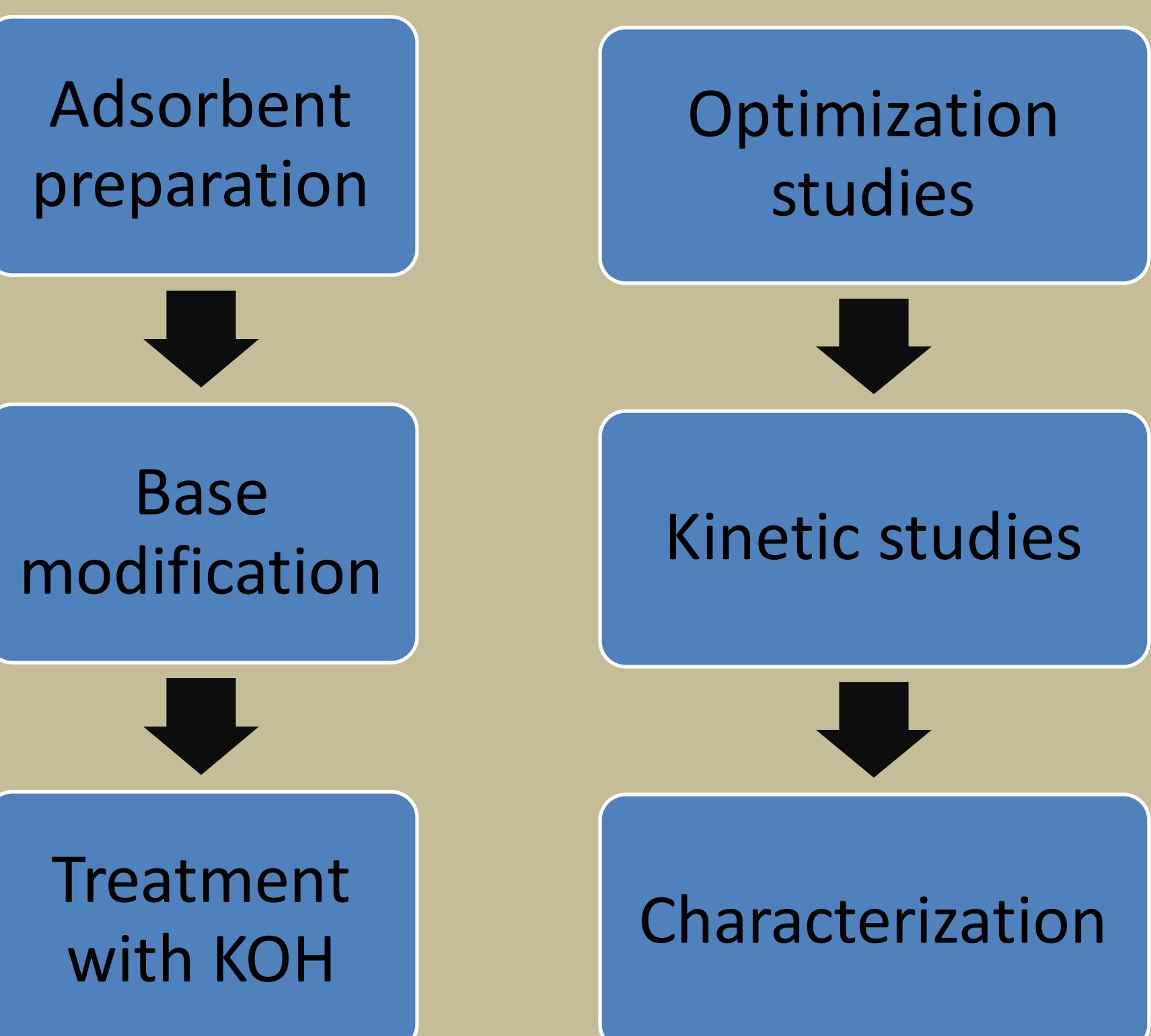
5. Pseudo 2nd Order Kinetics



Conclusion

- The 0.1 M base modified BPSB shows higher adsorption capacity for MB and Rh B.
- The pseudo second order kinetics was the best fitted model for both dyes.
- Study demonstrates that BPSB can be used as an eco-friendly alternative for dye removal.

Methodology



References

1. Bello, O. S.; Alabi, E. O.; Adegoke, K. A.; Adegboyega, S. A.; Inyinbor, A. A.; Dada, A. O. Rhodamine B Dye Sequestration Using Gmelina Aborea Leaf Powder. *Heliyon* **2020**, *6* (1), e02872. <https://doi.org/10.1016/j.heliyon.2019.e02872>.
2. Rafatullah, M.; Sulaiman, O.; Hashim, R.; Ahmad, A. Adsorption of methylene blue on low-cost adsorbents: A review. *J. Hazard. Mater.* **2010**, *177*, 70-80. <https://doi.org/10.1016/j.jhazmat.2009.12.047>