CHAPTER V
CONCLUSION

5.1 Conclusion

This research successfully demonstrated the optimization of α-amylase inhibitory extract production from white kidney beans (*Phaseolus vulgaris*) and subsequently validated its potential in *in vivo* models for weight management and glycemic control. Through a systematic Box-Behnken design and Response Surface Methodology (RSM), optimal extraction parameters were identified, yielding an extract with high specific activity (0.111 units/mg) at 0.101 M PBS, 1-hour extraction, and 30 minutes separation. Slightly adjusted conditions also maximized extract yield (11.89%). This robust optimization strategy provides a clear pathway for efficient and scalable production of this valuable extract.

Furthermore, the *in vivo* study using obese Wistar rats underscored the physiological benefits of the *P. vulgaris* extract (PVE). Low-dose PVE in cafeteria-diet (CAF) fed rats significantly reduced postprandial glycemia and decreased food and energy intake, indicating its role in mitigating obesity-related markers. While the overall glucose exposure (AUC) in the oral glucose tolerance test was not significantly altered, the positive changes observed at individual time points, coupled with reductions in body weight gain, food intake, and energy intake, suggest a promising impact on metabolic health.

In conclusion, the α-amylase inhibitors present in *P. vulgaris* show significant potential to positively impact body weight, weight gain, and glycemia. This comprehensive study provides strong support for further exploring PVE as a valuable functional ingredient in the food industry. Its application could lead to the development of novel products aimed at weight management andglycemic control, offering a natural and effective approach to addressing global health concerns like obesity and type 2 diabetes.