STUDY ON THE GUT BACTERIAL COMMUNITIES IN SILKWORM *Samia ricini* FED ON DIFFERENT FOOD PLANTS

A THESIS
SUBMITTED TO THE BODOLAND UNIVERSITY
FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN ZOOLOGY
UNDER THE FACULTY OF SCIENCE AND TECHNOLOGY

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REGISTRATION NO. FINAL.ZOO00273 OF 2019-20
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2024

CONCLUSION

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In conclusion this comprehensive study illuminated the multifaceted impact of different food plants viz. *R. communis*, *M. esculenta*, and *C. papaya* on the growth and development of Eri silkworm larvae. The findings revealed distinct growth patterns, nutritional variations, and gut bacterial dynamics influenced by the larvae's diet. Notably, Castor stands out prominently, both morphological and nutritional constituents, emphasising its pivotal role as the primary food plant. The exploration of gut bacterial communities in *S. ricini* larvae through culture-independent 16S rRNA metagenomics revealed the significance of dominant gut bacteria like Proteobacteria, Firmicutes, and Actinobacteria, elucidating their crucial roles in metabolic functions such as membrane transport, carbohydrate and amino acid metabolism, energy metabolism, replication and repair, nucleotide metabolism, lipid metabolism, as well as xenobiotic degradation and immune system support. Furthermore, the culture-dependent approach highlighted specific gut bacterial species such as *Mammaliicoccus sciuri*, *Mammaliicoccus sp*., *Bacillus licheniformis*, *Bacillus sp*., *Bacillus subtilis*, *Brevundimonas diminuta*, *Winslowiella iniecta*, *Winslowiella sp*., *Klebsiella oxytoca* and *Citrobacter sp*., which played vital roles as symbiotic bacteria by producing essential digestive enzymes such as α-amylase, cellulase, proteinase, and lipase, depending on host plants (*R. communis*, *M. esculenta*, and *C. papaya*). This study not only enhances our understanding of the intricate relationship between larval diet, gut bacteria, and physiological development but also calls for further research utilizing advanced metodologies. The study provided valuable insights into the physiology of Eri silkworm, laying the ground work for future metagenomic studies. Moreover, the practical significance of this study extends to improving gut health, enhancing silk quality and silk yield of Silkworm through target approaches such as probiotic formulation. By contributing crucial information for achieving healthy and robust Eri silkworm, this research has significant implications for the development and sustainability of silk industry.