

CONTENTS

| | Pages |
|--|----------|
| 1. Introduction | 1-7 |
| 2. Review of Literature | 8-26 |
| 2.1 Phenology : Environmental cues and initiation, maintenance and termination of pupal diapause | 8-13 |
| 2.2 Endocrine mechanism of pupal diapause | 13-18 |
| 2.3 Changes in biochemical profiles of different tissues during development of insects | 18-23 |
| 2.4 Effect of vertebrate insulin on the physiology of insects | 23-24 |
| 2.5 Effects of exogenous ecdysone on diapause physiology of insects | 24-26 |
| 3. Materials and Methods | 27-38 |
| 3.1 Comparative phenology of both non-diapause and diapause generations of <i>A.mylitta</i> | 27-29 |
| 3.2 Starvation and neck ligation experiments for ascertaining the timings of PTTH release by the fifth instar larvae of both the generations | 29-31 |
| 3.3 Quantitative status of cholesterol, protein, DNA and RNA of haemolymph, fat body and gonads of pre-pupae, pupae and adults of both the generations | 31-37 |
| | Contd... |

| | | | |
|-----|---|-------|-------|
| 3.4 | Treatment of pre-pupae, early and late pupae of diapausing generation of <i>A. mylitta</i> with insulin | ..... | 37-38 |
| 3.5 | Treatment of diapause-destined pre-pupae with 20-hydroxyecdysone | ..... | 38 |
| 4. | Results | ..... | 39-63 |
| 4.1 | Comparative phenology of larvae, pupae and adults of both non-diapause and diapause generations | ..... | 39-43 |
| 4.2 | Determination of critical weight of fifth instar larvae and Timings of PTTH release for larval-pupal transformation | ..... | 44-47 |
| 4.3 | Profile of cholesterol, protein, DNA and RNA contents in some tissues of pre-pupae, pupae and adults of non-diapause and diapause generations | ..... | 48-55 |
| 4.4 | Effect of insulin on diapause generation of <i>A. mylitta</i> | ..... | 56-61 |
| 4.5 | Effect of exogenous 20-hydroxyecdysone on the diapause-destined pre-pupae | ..... | 62-63 |
| 5. | Discussion | ..... | 64-80 |
| 5.1 | Comparative phenology of two generations | ..... | 64-68 |
| 5.2 | Timing of PTTH release for larval-pupal transformation through starvation and neck ligation | ..... | 68-71 |

Contd...

| | | | |
|-----|--|-------|---------|
| 5.3 | Biochemical status of cholesterol, protein, DNA and RNA in the haemolymph, fat body and gonads of prepupae, pupae and adults | ..... | 71-76. |
| 5.4 | Effect of vertebrate insulin on the termination of pupal diapause | ..... | 76-77 |
| 5.5 | Effect of exogenous 20-hydroxyecdysone on the termination of pupal diapause | ..... | 78-80 |
| 6. | Summary | ..... | 80A-80B |
| 7. | References | ..... | 81-120 |

.....