

RESEARCH PAPER

Effect of matereological variation on the RNA content in the fat body of multivoltine silkworm *Bombyx mori* Linn.

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Accepted : March, 2010

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ABSTRACT

Matereological variation has influenced the total RNA content in the fat body of different developmental stages of *Bombyx mori*. The RNA content was maximum in the fat body of 5th instar larvae reared at spring, while that was minimum in the fat body of adult reared at winter.

Key words : Fat body, RNA, *Bombyx mori*

Nistari race of *Bombyx mori* Linn. is a resistant variety of multivoltine mulberry silkworm in the northern belt of India. The ultimate aim of developing sericulture industry is the production of standard quality of raw silk which can sustain in world market. The spinning is an important process during the post embryonic development. The developing silkworm represents a dynamic system which changes continuously in its physiological and molecular properties as the morphogenesis proceeds. The synthesis of nucleic acids in the silk gland of *B. mori* determines the level of silk production. Proteinaceous sphere has been observed in the fat body of the honey bee larva (Oertel, 1930) and in the fat body of starved mosquito larvae after the larvae were feed casein (Wiggelesworth, 1942). Accumulation of proteinaceous sphere has also been observed in the fat body from the last larval stage of the silk moth, *Phelosamia cynthia ricini* (Walker, 1966; Ishizaki, 1965) and the larval fat body of the *Trogoderma granarium* (Nair and Karnavar, 1968). It was found that the polysome are not dissociated by treatment with RNase. However, if the polysomes were treated with trypsin as well as RNase, then ribosomes were obtained (Tsiapalis *et al.*, 1967). From this and other evidence, the authors concluded that protein plays an important role in maintaining the integrity of the polysomes and RNA

MATERIALS AND METHODS

The seed cocoons of multivoltine nistari race *B. mori* were obtained from the silkworm grainage Behraich Directorate of Sericulture, Uttar Pradesh and maintained in plywood trays under the ideal rearing conditions in the laboratory (25±1°C and 80 ± 5%RH) till the emergence

of moths from the seed cocoons.

The estimation of RNA was performed according Schneider (1957) by using orcinol reagent and standard curves were drawn using different concentrations of yeast RNA as standard.

RESULTS AND DISCUSSION

The results obtained from the present investigation are presented below :

Total RNA contents in fat body:

The data presented demonstrate the changes in the level of total RNA content in the fat body of *Bombyx mori* during different development stages and varying matereological regimes. The total RNA content in the fat body of 4th instar larvae was influenced by the matereological temperature variations. With the variation in temperature from winter (10°C) to spring (25°C), the total RNA content increased from 0.84 µg/mg at 10°C to the maximum level of 2.12 µg/mg at 25°C. But further increase in matereological temperature from spring (25°C) to summer (34°C) caused gradual decrease in the total RNA contents. The total RNA contents in the fat body of 5th instar larvae were also influenced by the matereological variations. With the increasing matereological temperature from winter (10°C) to spring (25°C) the total RNA content increased gradually from 0.92 µg/mg at winter (10°C) to the maximum level of 2.42 µg/mg at spring (25°C). While further increase in temperature from spring (25°C) to summer (34°C), caused gradual decrease in total RNA content. The total RNA content in the fat body of pupal stage was also influenced by the variations of metrological factors. With the