

RESEARCH PAPER:

## Impact of enzyme activity in silkworm, *Bombyx mori* (L.) feeding with tukra affected mulberry leaves

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### SUMMARY

In the present study fifth instar larvae PMxNB4D2 (F1 Multix Bivoltine hybrid) silkworm were selected for feeding with tukra leaves due to the rapid growth at this period, AAT and ALAT enzyme activities in haemolymph and fat bodies of the silkworm when fed with 25%, 50%, 75% and 100% tukra affected leaves were normal from day 3 to day 6 and in the both the tissues. The contents gradually increased, this increase however was significant ( $P>0.05$ ). This increase gradually progressed from day 3 to day 6 in the order of day  $3<4<5<6$ . The GDH activity decreased in both the tissues from day 4 to day 6 at 75% and 100%. tukra fed silkworm larvae. Hence, there was a situation of nutritive imbalance and physiological status created in the tissues of silkworm. Estimation of enzyme activities indicated the stepwise break down by the bio molecules in the tissues of silkworm due to vast infestation of mealy bugs in mulberry leaves which lead to very low nutritive value in mulberry at 75% and 100% tukra affected leaves which is the dietary source to the silkworm, *Bombyx mori* (L.).

Key words :  
*Bombyx mori*,  
tukra, AAT,  
ALAT, GDH

Cultivation of mulberry (*Morus* sp.) and rearing of silkworms are the basis of sericulture industry that is dependent primarily on mulberry leaves. The only source of nutrition for the silkworm, the growth and development of the larvae and subsequent cocoon production are very much influenced by its nutritive value (Anonymous, 1975; Krishnaswamy, 1994).

Sericulture has really come to age and is now poised for a great leap forward. The success of sericulture depends industry upon several environmental factors which play major role. There are biotic and abiotic factors which influences upon silkworm and leaf quality, seed quality, fecundity etc. Among these, environment plays a greater role at various stages during the course of insect development. There are no silkworm races at present which be deemed totally resistant to contaminated food, but different races of silkworm shows variation in their susceptibility to different pests and pesticides (Liu, 1984). Moore (1967) has discussed in detail the problem of pests and its management in ecological research. The mealy bug, *Maconellicoccus hirsutus* (Homiptera; Pseudococcidae) is reputed as a vector of the viral disease, popularly known as tukra disease of mulberry (Rangaswami *et al.*, 1996). Mealy bug infestation of mulberry by *Maconellicoccus hirsutus* (Green) causes

malformation of terminal buds and the appearance of small curly leaves on the shoots. The food and dietary water intake and utilization were studied by feeding diseased mulberry leaves to the silkworms, *Bombyx mori* (L.) during the fifth instars, caused shortening of the level duration and significant in conversion rate, conversion efficiencies, water absorption efficiency, water retained in the body and water retention efficiency. In continuation of this, a significant increase in biomass, cocoon, pupal and shell weights followed by their efficiencies were noticed inspite of lesser wet food consumed and water intake and utilization were decreased (Aftab Ahamed *et al.*, 1999). The efficiency is the amount of food required to reach its potentiality will be manifested in various ways and degrees (Waldbauer, 1968). Therefore an effort has been made to find out the effect of feeding tukra affected leaves by silkworm rearing performance.

### MATERIALS AND METHODS

For the experimental materials, the popular south Indian F<sub>1</sub> cross breed (CB) silkworm PM x NB4D2 race hybrid F1 variety of silkworm *Bombyx mori* (L.) was used as test insects, which are abundantly available in and around Anantapur district, A.P.

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