



# RELATIVE EFFECTS OF SOME CHEMICAL MUTAGENS OF THE ECONOMIC CHARACTERS OF TASAR ( ANTHERAEA MYLITTA D.)

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## **ABSTRACT**

The relative effects of some chemical mutogens viz mytomycin-c and E.M.S. in different concentrations at egg and pupal levels of tasar producing insect. *Antheraea mylitta-D* in relation to its economic characters have been evaluated during the red crop and commercial crop season. Results of the experiments are indicative of the fact that lower concentration of chemical mutagens having 0.01% and 0.1% as effective in improving the cocoon weight shall weight shall ratio filament length. And denier of tasar yarn. The higher concentration of E.M.S. and mytomycin-c have shown lethal effect and adverse manifestation on the Economic characters of tasar. No seasonal variation in respect of two different seasons have been noticed. The results obtained may be due to stimulating effect of mutagens on the life cycle of tasar silk worm. Which is very much in conformities with the earlier work carried out by Sharma and Kumar.

Key Words: *Antheraea mylitta-D* mytomycin-c E.M.S. seed crop. Commercial crops.

## **INTRODUCTION**

Tasar silk being produced by different species of *Antheraea* belonging to family *saturniidae* of order *lepidoptera* has earned great importance owing to its commercial value. The Prominent species of tasar producing insects are *Antheraea mylitta*.

*Antheraea pernyi* and *Antheraea frithi*. Among these *Antheraea mylitta* D is indigenous species found in tropical belts of our country in the forms of various eco races and mutant strains.

C. Auerbach was first to find that mutation can also induced due to certain chemicals. She made this unique discovery during World War II. The chemical is used for inducing mutations were mustard gas ethyl urethane, Phenol, formaldehyde etc. Today we have a very long list of chemicals which can induced mutation for examples E.M.S mytomycin and colchicin are common chemical widely used in recent days. In light of the afforsaid information. The present project entitled Relative effects of some chemical mutagens on the economic characters of Tasar (*Saturniidae* lepidoptera).

## MATERIAL AND METHODS

Disease free healthy tasar cocoons of *Antheraea mylitta* were collected from the rearing sites and were part as per sampling of the cocoons in ventilated cages. The analysis of the cocoons were carried out in terms of weight age of the pupae peduncle length sex period of harvesting and also color of the cocoon. The cocoons were divided in different lots and replications and were properly labeled before this various treatment. The uniformity in selection of lots was maintained.

The grainage operation was further carried out as per the method suggested by Jolly et al. (1973) and Krishnaswamy (1975) All the experimental lots were subjected to different doses of chemical mutagens. Viz: mytomycin-c E.M.S. (Ethyl methyl sulphonate) mustard oil  $\text{HNO}_2$ . And colchicine. A control without any treatment was maintained in all cases of the experiment. The faral rearings were carried out the gamolla grown *Terminalia arjuna* host plants under Ventilated Laboratory conditions.

## OBSERVATIONS

The data is summarised in Table 1 accounts for the relative effects of mytomycin-c on the economic characters of *Antheraea mylitta* during the seed crop season. The hatching percentage (56.0, 50.0, 40.0) the E.R.R percentage (28.0, 23.0, 16.0) cocoon weight (11.49, 10.93, 10.12 gm) shall weight 1.43, 1.38, 1.10gm) shall ratio 12.16, 11.34, 10.28) Filament length (740, 735, 700 m) and Denier ( 11D, 9D, 6D) at 0.01%, 0.1%, 1.0%) account for the relative variations it is evident that the said economic characters

gradually get deteriorated with the increase of dosages from 0.01 to 1.0 percent as compared to control. The hatching (54.0) E.R.R. (25.0) cocoon weight (11.38gm) shall weight (1.40gm) shall ratio (12.14%) Filament length (735m) and denier (10D) as recorded in the control is lower than the eggs treated at 0.01% concentration of mytomycin-c which reveals the effectiveness of 0.01% concentration in relation to economic characters of tasar. The dosages such as 2.0% and 3.0 percent are totally lethal.

Table showing relative effects of different dosages of mytomycin-c egg level treatment on the economic characters.

### Antheraea mylitta -D

| S.N | Different dosages of mytomycin-c % | No. of eggs treated | Hatching | E.R.R | Cocoon weight gm | Shall weight gm | Shall ratio % | Filament length m | Denier     |
|-----|------------------------------------|---------------------|----------|-------|------------------|-----------------|---------------|-------------------|------------|
| 1   | 0.01                               | 100                 | 56.0     | 28.0  | 11.49            | 1.43            | 12.16         | 740               | 11D        |
| 2   | 0.1                                | 100                 | 50.0     | 23.0  | 10.93            | 1.38            | 11.34         | 735               | 9D         |
| 3   | 1                                  | 100                 | 40.0     | 16.0  | 10.12            | 1.10            | 10.28         | 700               | 6D         |
| 4   | 2                                  | 100                 | .....    | ..... | .....            | .....           | .....         | .....             | ...<br>... |
| 5   | 3                                  | 100                 | .....    | ..... | .....            | .....           | .....         | .....             | ...<br>... |
|     | Control                            | 100                 | 54.0     | 25.0  | 11.38            | 1.40            | 12.14         | 735               | 10D        |

= significant

= Lethal

Data 1 is showing significant and lethal different concentration of mytomycin-c.

## DISCUSSION

As a matter of fact the indigenous species of Antherae with its different eco races exist in the forest areas and the larva feed on the foliage of different host plant. The famous Antheraea mylitta produces the cocoons from which the tasar yarn is obtained for commercial purpose. In the field of tasar culture many attempts have been taken to cope up with the above mentioned problem. In this direction a concept to stimulate the metabolic manifestation of tasar worm for desired result by some chemical mutagens may influence the physio-genetic make up of individual and metabolic performances. It is known as besides radiations. Chemical mutagens. C. Aurbach was the first to find that mutation can be induced by certain chemicals. The chemical used for inducing mutation are of different types based on stimulating properties. The chemical constituent of various mutagens becomes the basic factor in response to individuals accelerating the growth and development and also for changing the genetic architecture of the organism. The mutagens have toxic properties as well which causes lethality or may be prone to sublethal. The common chemicals used for inducing mutation are mustard gas, ethyl methane sulphonate (E.M.S), mytomycin-c,  $\text{HNO}_2$  and calchicine are widely used under laboratory conditions.

## REFERENCES

- Ahsan, M.M, Khatri, R.R. and Sinha, A.K 1975 effect of temperature and RH on egg laying behavior of Tasar silk worm. A. mylitta D Annual report C.T.R.S Ranchi. Govt. of India Proj. 2-3.
- Auerbach C (1962): Mutation Part methods diner and boyd. Edinburgh.
- Sidhu N.S srineuasan R and Savmachary 1967 Fertility performance of female moths depends on their male mates *Indeas J. Sevi.* 1 (2) 77-82.
- Sinha S.S. and Jolly M.S. (1967) : Chromosomes number in Tasar silkworm *Antheralle mylitta D curr scie* 3a (13) 359-360
- Sidhu N.S and Khan A.A (1969) Egg laying as a hereditary characters in silkworm. Fertility difference in three silk breeds S.I.B No. 2 C.S.R. and T.I mysore. *Indians* 1-7.
- Sharma and Kumar : Earlier Work carried out tasar silk worm.