

International Journal of Advanced Research in Biological Sciences

ISSN: 2348-8069

www.ijarbs.com

(A Peer Reviewed, Referred, Indexed and Open Access Journal)

DOI: 10.22192/ijarbs

Coden: IJARQG (USA)

Volume 9, Issue 1 -2022

Research Article



DOI: <http://dx.doi.org/10.22192/ijarbs.2022.09.01.007>

Impact of fortification of mulberry leaves with homeopathic drugs on economic traits of silkworm *Bombyx mori* L.

Bhalerao R. S.

I.C. S. College of Arts, Commerce and Science, Khed, Ratnagiri (MS)

E-mail: rsbhalerao7@gmail.com

Abstract

In the present study the fifth instar Silkworm larvae, *Bombyx mori* L. were fed on the mulberry leaves fortified with homeopathic drugs Chemidonium, Nux vomica and Phytolacca berry mother tincture. The impact of treatment on larval, cocoon, shell and pupal weight, silk ratio, larval mortality, average filament length, filament weight and denier were investigated.

The results showed that, there was positive impact on most of the characteristics of silkworm *Bombyx mori* L. larvae fed on mulberry leaves fortified with homeopathic drug Chilidonium and Nux vomica, while with Phytolacca berry shows negative impact on most of the economic characters of *Bombyx mori* L.

Keywords: *Bombyx mori*, Mulberry leaves, Fortification, Homeopathic drug, Chilidonium, Nux vomica, etc.

Introduction

The nutrition background of the larvae influences greatly on the resulting pupa, adults and silk production. The leaves of superior quality enhance the chances of good cocoon crop. The dietary nutritional management influences directly on quality and quantity of silk production in *Bombyx mori* L., Muragan, et al., (1998). In recent years, many attempts have been made either to fortify the leaves with nutrients, spraying with antibiotics, juvenile hormone, plant products with JH mimic principles or using extracts of plants etc. to improve the quantity and quality of silk. The fortification or supplementation of nutrients along with natural diet, enrich the nutritional value of the diet, making it more useful from the nutritional point of view, Hippargi, (2001), Sannapa B., et al. (2002). K. Masthan et al. (2017).

It is seen that, there are no attempts made by using the Homeopathic drugs for improving the status of sericulture industry. In this light for the benefit of

common farmers, this is the attempts has been made to find out the effect of Nux vomica, Chelidonium and Phytolacca berry, homeopathic drugs on the biological parameters of silkworm *Bombyx mori* L. The drug picture is explained nicely by Tyler, (2002). The importance of homeopathic drugs and their effective sustainable use other than human is explained well by Naveen, (2005) and impact of homeopathic drugs on the silkworm characters were positive on most of the characters was explained by Hiware, (2005), Hiware, 2006).

Materials and Methods

Experimental details

- i) Design : Completely Randomized Design (CRD)
- ii) No. of replication : 3
- iii) Mulberry variety : V1
- iv) Number of treatments : 3

T1= Chelidonium
 T2= Nux vomica
 T3= Phytolacca berry

The productive bi x bivoltine hybrid CSR2 x CSR4 was used for evolution of effect of above drugs on biological characters of silkworm.

The experiment was conducted by taking randomly just 4th moult passed i.e. 5th instar larvae in four groups. For each group i.e. one control and three experiments 50 larvae were taken in three replicates. All the groups were exposing to the trial under same environmental condition.

For fortification the mother tincture of Chelidonium, Nux vomica and Phytolacca berry were procured from local Central Homeopathic Pharmacy Shop, Dalalwadi, Aurangabad, M.S. India. The test solutions were prepared by using 10 ml of drug with 40 ml of distilled water was used as stock solution, kept in refrigerator. The quantity of feed given to the all groups with 40 g of matured mulberry chopped leaves for each feed and 4 feedings per day were provided. One group was kept control giving the first feeding by using non treated only distilled water but the experimental group was given first feed sprinkled, mixed with the 2 ml of test solution till the larvae went

on spinning. Evaluation was on the basis of larval weight, total mortality, cocoon weight, shell weight, pupal weight, shell ratio, filament weight, filament length and denier. The values were compared between experimental and control groups in terms of percent change over control.

Results

There was a trend favoring in two treatments with Chelidonium and Nux vomica in more characters observed except cocoon weight, pupal weight and denier of filament in experimental group compared to the control group. The treatment with drug Phytolacca berry showed negative trend in most character except shell ratio percent. The result showed that larval weight was significantly increased in the groups treated with drug Chelidonium (3.387g) and Nux vomica (3.524g), when compared with control group (3.112g) by the values 8.119% and 11.691% respectively. But in the group treated with drug Phytolacca berry larval weight (2.962g) was significantly decreased with values -5.064%. Mortality in control group was 4 in number which similar to Chelidonium and Nux vomica groups, but in group treated with Phytolacca berry mortality was 5 in number. No significant difference between control and experimental groups.

Table-1: Effect of Chelidonium, Nux vomica and Phytolacca berry drugs on biological characters of silkworm.

Sr. No	Characters	Control group	Treatment group			Percentage change over control (%)		
			T1	T2	T3	T1	T2	T3
1	Larval weight (g)	3.112	.387**	3.524**	.962**	8.119	11.691	-5.064
2	Total mortality	03	03	03	04	00.00	00.00	25.00
3	Cocoon weight (g)	1.804	1.800	1.795	1.772	-0.222	-0.501	-1.805
4	Shell weight	3.60	0.387*	0.392*	0.357	6.976	8.163	-0.840
5	Pupal weight(g)	1.444	1.413	1.403	1.415	-2.193	-2.922	-2.049
6	Shell ratio (%)	19.955	21.50**	21.838**	20.146	7.186	8.622	0.948
7	Filament length (m)	887	998*	1008**	871	11.122	12.003	-1.836
8	Filament weight(g)	0.234	0.268*	0.284*	0.230	12.686	17.605	-1.739
9	Denier	2.374	2.416	2.535	2.376	1.738	6.351	0.084

* < 0.05; **<0.01; t- test

There was significantly an increased or positive trend shown in the values of different characters viz. shell weight (0.387g), shell ratio percentage (21.50 %), filament length (998m) and filament weight (0.268g) in the group treated with drug Chelidonium over control group by values 6.976%, 7.186%, 11.122% and 12.686% respectively. More or less similar trend was observed in the group treated with drug Nux vomica regarding characters, shell weight (0.392g), shell ratio percentage (21.828 %), filament length (1008 m) and filament weight (0.284g) over the control group by values 8.163%, 8.622%, 12.003% and 17.605% respectively. Cocoon weight (1.800g), pupal weight (1.413g) and filament denier (2.416) were decreased in the group treated with drug Chelidonium when compared with control group. Similar result was also observed in the group treated with Nux vomica regarding characters cocoon weight (1.795g), pupal weight (1.403g) and filament denier (2.535) when compared to control group with values - 0.501%, -2922% and 6.351% respectively. In the group treatment with drug Phytolacca berry showed negative trend for all characters under studied except shell ratio percentage (20.146 %) compared with control group but it was non-significant over control group.

Discussion

The results revealed that, in the group treated with drug Chelidonium significantly increased larval weight (3.387g), shell weight (0.387g), shell ratio percentage (21.50%), filament length (998m) and filament weight (0.268g) over control group except cocoon weight (1.800g), pupal weight (1.413g) and denier of filament (2.416). It was not significant to control group. The similar trend was occurred in the group treated with Nux vomica for all characters; larval weight (3.524g), shell weight (0.392g), shell ratio percentage (21.838 %), filament length (1008 m) and filament weight (0.284g) over control group. The finding of increased larval weight was in line with the finding of Verma, et al., (1963); Rajshekhargouda, et al., (1999); Ray, et al., (2002); Cui, et al., (2003) and Kamalakannani, et al., (2005), Hiware, (2005, 2006), Avhad et al. (2015). The result of increased in shell weight, shell percentage and filament length are in line with Rai, et al., (2000); Sundar, et al., (2003) and partially in line with result of Rajendra Prasad, (2004) but they have used other methods feeding supplementation. The present study of increased most of the characters by fortified leaves with homeopathic drugs Chelidonium and Nux vomica is co-related with Hiware, (2005, 2006).

Filament size increased by 12.686% and length by 11.122% in group treated with Chelidonium and in Nux vomica these were increased by 17.605% and 12.003% respectively. This result is similar to the finding of Kalpana, et al., (2002); Rahmathulla, et al., (2003) by other supplementation methods. In group treated with drug Phytolacca berry showed negative trends of all character except shell ratio percentage (20.146%) over control group by value 0.948, it was not significant.

References

1. Avhad Sunil B., Pagare Popat M. and Hiware Chandrashekhar J., (2015). Impact assessment of homeopathic drugs Iodium and Lachesis on larvae, cocoon and post-cocoon characteristic of *Bombyx mori* L. International journal of research in Bioscience 3-4: 93-97.
2. Cui W. Z, Shang J.-Y, Wang B. and Cheng A.-W., (2003) Effects of vitamin C on feeding habit and growth and development of the silkworm, *Bombyx mori* L. Sercologia 43(1): 73-80.
3. Hipparagi, G. D.; Rayar, S. G. and Karabhantanal, S. S., (2001) Field spray of botanicals on mulberry and its effect on silkworm *Bombyx mori* L. growth and development. National Seminar on mulberry sericulture research on India, Bangalore, 127.
4. Hiware C.J (2005). Effect of fortification of mulberry leaves with the homeopathic Drug, Chelidonium on *Bombyx mori* L. Simillimum, J. of the Homeopathic academy of naturopathic physicians. 18:129-132.
5. Hiware C.J (2006). Effect of fortification of mulberry leaves with the homeopathic Drug, Nux vomica on *Bombyx mori* L. Homeopathy 95:148-150.
6. Kalpan, G.V.; Suresh Kumar, N.; Malreddy, N.; Joge, P.G. and Palit, A.K., (2002) Productive bivoltine silkworm hybrids of *Bombyx mori* L. for longer filament length and thin denier. Advances in Indian Sericulture Research. Proceedings of the National Conference on Strategies for Sericulture Research and Development, (2000). 129-133.
7. Kamalakannani, S.; Thangamani, A. and Murugan, K., (2005) Efficacy of two drugs – Supradyn and Spirulina solution on growth efficiency, silk productivity and reproductive efficiency of mulberry silkworm, *Bombyx mori* L. Jour. of Entomological Research, 29(4): 281-287.

8. Masthan K., Rajkumar T. V., and Narasimha Murthy (2017). Studies on fortification of mulberry leaves with probiotics for improvement of silk quality. International journal of Biotechnology and Biochemistry, 13-1:73-80.
9. Naveen P. K., (2005). The relevance of homoeopathy in veterinary therapeutics and safe animal food production. Proc. of the Natl. Semi. on Application of Homoeopathy in plants, Animals, Birds Fishes, Soil, Water and Environment, Thrissur, Kerala, India, : 120-134.
10. Rahmathulla, V. K.; Nayak, P.; Vindhy, G. S.; Himantharaj, M.T. and Rajan, R.K., (2003) Effect of antibiotic (Norfloxacin) administration on commercial characters of new bivoltine and cross breed hybrid silkworm (*Bombyx mori* L.). International Journal of industrial Entomology, 7(2): 191-195.
11. Rai, M.M.; Rathod, M.K., and Khurad, A.M., (2000) Effect of fortification of mulberry leaf with lactalbumin hydrolysate and MM insect cell culture medium on silkworm, *Bombyxmori* L. Bullentin of Indian Academy of Sericulture, 4(2): 27- 33.
12. Rajendra Prasad, P., (2004) Effect of fortification of ascorbic acid through mulberry leaf on cocoon traits of Pure Mysore race of silkworm, *Bombyx mori* L. Indian J. of Entomology, 66(1): 37-39.
13. Rajshekargouda, R.: Gopalan, M.; Jayaraj, S. and Natarajan, N., (1999) Fortification of mulberry leaves with sugars to improve yield of *Bombyx mori* L. In: Proc. of Natl. Semi. on Tropical Seri., Univ. of Agri. Sci., Bangalore, Dec.28-30, 1999, Ed. By R. Govindan et al., 2: 161-162.
14. Ray, N. and Senapathi, S.K., (2002) Studies on combined effect of fertilizer levels and antibiotic on rearing performance of bivoltine silkworm, *Bombyx mori* L. under Terai region of West Bengal. Crop Research (HISAR), 23(1): 1.
15. Sannapa B., Jaya Ramaiah M. and Chadrapa D. (2002). Influence of castor genotype on consumption. Sericologia, 42:197-2-3
16. Sundar Raj, S.; Nangia, N.; Chinnaswamy, K. P.; Srinivasa Gowda, R. G. and Bharathi, V.P., (2003) Effect of fortification of protein supplements on economic traits of *Bombyx mori* L. In: Abstr. of Natl. Semi. On Sustainbale Seri. India, 1-2 Feb., 2003, Dept. of Appl. Animal Sci., B.B. A. Univ., Lucknow, India., pp. 59-60.
17. Tyler M.L., (2002) Homoeopathic Drug Pictrues. New Delhi, India: Indian Books and Periodicals Publishers, : 601-609.
18. Verma, A. N. and Atwal, A. S., (1963) Effect of Chloromycetin and Molassess on the growth and production of silk by *Bombyx mori* L. (Lepidoptera: Bombycidae). Indian J. Seri. 1: 1-14.

Access this Article in Online	
	Website: www.ijarbs.com
	Subject: Sericulture
Quick Response Code	
DOI: 10.22192/ijarbs.2022.09.01.XXX	

How to cite this article:

Bhalerao R. S. (2022). Impact of fortification of mulberry leaves with homeopathic drugs on economic traits of silkworm *Bombyx mori* L. Int. J. Adv. Res. Biol. Sci. 9(1): 54-57.

DOI: <http://dx.doi.org/10.22192/ijarbs.2022.09.01.XXX>