

### Modification in the Fecundity and Life Span of the Moth *Corcyra cephalonica* Staint. Receiving Dietary Antibiotics in the Larval Stages

Limited studies have shown that an alteration in the biology of insects may occur following the administration of antibiotics. SAXENA and SRIVASTAVA<sup>1</sup> have summarised the results of studies by various workers on the subject. Instances of alterations in biology indicate that the administration of antibiotics either produce beneficial effects on the biology of insects or remain ineffective and may even produce deleterious effects<sup>2-4</sup>. The present communication deals with the study of the effects of three antibiotics at different levels of application on the fecundity and longevity of the moth *Corcyra cephalonica* Staint., which is used as host for mass culture of insect parasites of agricultural importance. Nothing is known, so far, about the role of antibiotics in the biology of this insect.

Single pair culture of corcyra was used in this experiment. The culture was successfully raised on crushed 'juar' (*Sorghum vulgare*) in jars of 20 × 15 cm size at temperatures ranging from 29°C to 35°C. For experimental purposes 25 × 5 cm glass vials were filled with 120 g of crushed 'juar'. Weighed quantities of the antibiotics Penicillin, Oleandomycin and Terramycin were incorporated in the diet by thoroughly distributing the premix in the vials containing the food. Premix was prepared in glucose in convenient amounts for efficient mixing. The control groups received an equal amount of glucose only in the diet. Twenty five freshly laid eggs (24 h layings) were introduced in the experimental vials containing the different levels of the various antibiotics. Four replications were used for each treatment. The biological observations on fecundity and longevity in respect of each treatment were regularly recorded after the emergence of the moths. Single pairs were confined separately in glass

vials 20 × 5 cm for fecundity and life span records. These vials contained thirty small pieces of black papers, rolled in balls of the size of 'juar' seed. No food was supplied to the moths. The observations are summarised in the Tables I and II. The data have been analysed statistically and the conclusions drawn are significant as a result of X<sup>2</sup> (Chi-Square) Test<sup>5</sup>.

It is evident from Table I that Oleandomycin and Terramycin had no effect on the fecundity at 50 p.p.m. level while Penicillin gave a significant increase in the number of eggs laid per female. Terramycin proved ineffective at all levels of application. Penicillin showed an increasing fecundity response at the levels of 100 p.p.m. to 1000 p.p.m. Oleandomycin enhanced the fecundity at 100 p.p.m. and 500 p.p.m. levels, but significantly reduced it at the 1000 p.p.m. level. The data summarised in Table II reveal that the life span of male moths remained unaffected by the administration of any one of the antibiotics. Penicillin, Oleandomycin and Terramycin had no effect at 50 p.p.m. level on any sex. The longevity of females was also generally not affected by any of the antibiotic treatments excepting Oleandomycin at 1000 p.p.m. level where the life span was found to be considerably reduced.

*Résumé.* L'auteur a constaté que l'oléandomycine et la terramycine n'ont aucun effet sur la fécondité et la longévité de *Corcyra cephalonica* Staint à la dose de 50 parts par million. La terramycine reste inefficace quelqu'en soit le dosage. La pénicilline augmente graduellement la fécondité à des doses de 50 à 1000 p.p.m. Il en est de même de l'oléandomycine à 100 et 500 p.p.m., mais à 1000 p.p.m., la fécondité diminue et dans ce cas la longévité des individus de sexe féminin est aussi considérablement réduite.

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Tab. I. Effect of various antibiotics on the fecundity of moths.

Doses parts per million	Penicillin		Oleandomycin		Terramycin	
	No. ob-served	Mean No. of eggs	No. ob-served	Mean No. of eggs	No. ob-served	Mean No. of eggs
50	30	119	40	107	27	97
100	32	127	23	137	34	103
500	35	143	33	132	21	100
1000	28	167	37	72	36	102
Control	39	103	29	110	38	99

<sup>1</sup> H. C. SAXENA and B. K. SRIVASTAVA, Proc. Nat. Acad. Sci. 30B, 15 (1961).

<sup>2</sup> E. A. STEINHAUS and C. R. BELL, J. Econ. Ent. 46, 582 (1953).

<sup>3</sup> M. R. V. MURTHY, B. S. SHANKARANARAYANA, and M. SREENIVASAYA, J. Sci. Ind. Res. 13B, 331 (1954).

<sup>4</sup> F. H. HARRIES, J. Econ. Ent. 54, 122 (1961).

<sup>5</sup> F. WILCOXON, Biometrics Bull. 1, 80 (1945).

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Tab. II. Effect of various antibiotics on the longevity of moths

Doses (parts per million)	Males				Females							
	Penicillin		Oleandomycin		Terramycin		Penicillin		Oleandomycin		Terramycin	
	No. ob-served	Average longevity (days)	No. ob-served	Average longevity (days)	No. ob-served	Average longevity (days)	No. ob-served	Average longevity (days)	No. ob-served	Average longevity (days)	No. ob-served	Average longevity (days)
50	30	6	40	6	27	7	30	7	40	6	27	7
100	32	6	23	6	34	6	32	6	23	8	34	6
500	35	8	33	7	21	7	35	7	33	6	21	7
1000	28	7	37	7	36	6	28	6	37	3	36	6
Control	39	7	29	6	38	6	39	7	29	7	38	6