

refractory to bovine leukemia virus infection⁵. The findings in this study are in conformity with the above workers while the infectivity of bovine leukemia virus to rabbits is being reported for the first time in the present work.

On inoculation of lymphocytes from a calf positive for bovine leukemia virus infection rabbits were found to produce antibodies against bovine leukemia antigens at 4th week postinoculation. The antigen prepared from the lymphocyte culture of rabbits positive for bovine leukemia virus antibodies reacted with standard serum and a line of identity with bovine leukemia virus antigen was observed. The reports of transmission of bovine leukemia to rabbits are not available in the literature. On inoculation of 1×10^4 lymphocytes in lambs, two out of 4 lambs showed the presence of antibodies against glycoprotein antigen of bovine leukemia virus at 8th week postinoculation. One more lamb developed antibodies at 12th week postinoculation. One lamb was negative for such antibodies throughout the course of experiment. It was observed that the rats after inoculation of lymphocytes from a calf positive for bovine leukemia virus infection do not show the presence of antibodies in their sera even upto 24th week post-inoculation.

The authors are thankful to Dr. M. J. Van Der Maaten, National Animal Disease Center, Ames., Iowa, for the supply of Glycoprotein antigen of bovine leukemia virus and its sera. The authors are also thankful to Dr. C. M. Singh, Director, Indian Veterinary Research Institute, Izatnagar, for valuable guidance and necessary facilities.

Bovine Lymphosarcoma Project, M. P. BANSAL,
Indian Veterinary Research Institute, K. P. SINGH,
Izatnagar 243 122 (U.P.),
September 18, 1979.

1. Olson, C., Miller, L. D., Miller, J. M. and Hoss, H. E., *J. Natl. Can. Instt.*, 1972, 49, 1463.
2. Hoss, H. E. and Olson, C., *Am. J. Vet. Res.*, 1974, 35, 633.
3. Maaten, M. J. Van Der, Miller, J. M. and Boettch, A. D., *J. Natl. Can. Instt.*, 1974, 52, 491.
4. Olson, C. and Baumgartner, L. E., *Cancer Res.*, 1976, 36, 2365.
5. Stephen, W. B., Baumgartner, L. E. and Olson, C., *J. Natl. Can. Instt.*, 1976, 56, 643.

EFFECT OF CORPUS CARDIACUM EXTRACT ON FECUNDITY OF *DYSDERCUS KOENIGII*

EXTRACT of corpus cardiacum has been known to affect various physiological processes in insects. While Davey¹ reported that it affects the frequency and amplitude of spontaneous rhythmic activity of muscles,

like those of heart, malpighian, tubules, oviducts, gut, etc., Novak² found it to be affecting the pigment migration activity pattern, water balance and other metabolic processes. Mordue and Goldsworthy³ recorded the increase in blood carbohydrate level and phosphorylase activity after its administration. They concluded that the two lobes of corpora cardiaca have different constituents and cause different changes after administration. The present paper deals with the effect of administration of corpus cardiacum extract of male *Periplaneta americana* on the fecundity of *Dysdercus koenigii*.

Materials and Methods

Extract of corpora cardiaca was prepared by homogenising corpora cardiaca in saline water from freshly killed male *Periplaneta americana* using a ground glass homogeniser to make the concentration of the extract, 1 pair gland per 50 μ l of the saline. A colony of *D. koenigii* was raised in the laboratory⁴ and 40 insects of each sex were picked up from the colony just after emergence and placed in separate glass jars. After 12 hrs a group of 10 females were given 12.5 μ l, another 25 μ l and the third group 50 μ l doses of the freshly prepared extract and were then left with the males in separate jars. Fourth group acted as control and was given saline instead of the extract.

Results and Discussion

Effect of corpus cardiacum extract was studied on the copulation time, time gap between copulation and egg laying and the number of eggs laid in each hatch.

The normal female *D. koenigii* lays nearly 250 eggs in two batches after approximately 9 hrs and a copulation period for about 10 hrs. More eggs are, however, laid in the first batch.

Table I shows that the gap between the copulation and egg laying was reduced after treatment. With the increase in the amount of the extract administered, the time was reduced. Treatment increased the number of eggs laid in each batch and the number of eggs increased with the dose. There seems to be a correlation in the time lapse between copulation and the egg laying and the number of eggs laid with the decrease in the time, the number of eggs laid increased (Table I). The results were compared with those of Govindan and Pillai's⁵ work who studied the process after thiolepa treatment. They noted that 4 μ g dose of thiolepa reduced the number of eggs to 113 ± 6 and 93 ± 8 in the first and the second batches respectively from 121 ± 7 and 114 ± 11 (Table I).

The copulation time also is affected by corpus cardiacum extract and it is reduced to less than half after 12.5 μ l dose and one-fourth after 50 μ l. It is also interesting to note that the mortality increased with

TABLE I
Effect of corpus cardiacum extract on the fecundity of *D. koenigii*

Treatment	Copulation time (hrs)	Time interval between copulation and egg laying (hrs)	Average No of eggs laid per female I batch	Average No. of eggs laid per female II batch
Control (injected with saline)	10.1±0.3	9.0±0.2	121.0±7.2	114.6±11.8
12.5 µl of the extract*	4.3±0.5	4.1±0.5	131.7±5.4	110.0± 2.5
25 µl of the extract*	3.4±0.7	3.4±1.0	151.6±7.2	130.0± 9.8
50 µl of the extract*	2.8±0.8	2.6±0.1	170.3±8.3	150.0± 8.4

* Corrected mortality with various doses of corpus cardiacum extract is 3.2%, 5.5% and 7.5% respectively.

the increase in the dose and hence higher doses were not tried (Table I).

The experiment indicates that corpus cardiacum controls and affects the fecundity and the time lapse between copulation and egg laying including the copulation time.

Department of Zoology,
Government College,
Ajmer (India),
December 6, 1979.

PUSHPA GHANSHANI,
SUDHIR BHARGAVA,*
G. N. TANDON.**

* For correspondence.

** Department of Zoology, DAV College, Ajmer (India).

1. Davey, K. G., *Adv. Insect Physiol.*, 1964, 2, 219.
2. Novak, V. J. A., *Insect Hormones*, 1966.
3. Mordue, W. and Goldsworthy, G. J., *Gen. Comp. Endocrinol.*, 1969, 2, 360.
4. Bhargava, S. and Pillai, M. K. K., *Ent. exp. and Appl.*, 1976, 20, 218.
5. Govindan, N. and Pillai, M. K. K., *Entomon.*, 1977, 2, 115.

AWARD OF RESEARCH DEGREES

Berhampur University, Berhampur, has awarded the Ph.D. degree in Botany to (Miss) Uttara Pattnaik; Ph.D. degree in Zoology to Shri Ramesh Chandra Choudhury.

University of Cochin, Tripunithura, has awarded the Ph.D. degree in Marine Sciences to Shri K. C. George and A. Antony.

Kakatiya University, Warangal, has awarded the Ph.D. degree in Mathematics to Shri P. Nageswara Rao and Shri Mohd. Thajuddin; Ph.D. degree in Physics to Shri D. Veerabhadra Rao; Ph.D. degree in Chemistry to Shri C. Janakiram Rao and Shri Y. V. D. Nageswar; Ph.D. degree in Zoology to Shri Syed Abdul Majid Hussaini.

Karnatak University, Dharwad, has awarded the Ph.D. degree in Mathematics to Shri Y. B. Maralabhavi and Shri Kabadi Suputra Appasab; Ph.D. degree in Chemistry to Shri A. H. M. Siddalingaiah; Ph.D. degree in Geology to Shri S. M. Karisiddaiah. Ph.D. degree in Botany to Shri B. S. Hiremath and Mrs. A. S. Nalini Prahakar.

Sri Venkateswara University, Tirupati, has awarded the Ph.D. degree in Physical Anthropology to Shri P. Chengal Reddy; Ph.D. degree in Zoology to Smt. R. Anasuya, Shri V. Bhaskara Haranat, Shri M. Narasimha Reddy, Shri M. Ramachandra Rao, Shri D. Chandra Sekhara Reddy, Shri I. Kabeer Ahammad Sahib, Miss K. Vijayakumari.

Utkal University, Bhubaneswar, has awarded the Ph.D. degree in Anthropology to Shri Bhupinder Singh; Ph.D. degree in Chemistry to Shri Arun Kumar Roy; Ph.D. degree in Geology to Shri Rabi Narayan Misra; Ph.D. degree in Botany to Shri K. Venkateswarlu; Ph.D. degree in Zoology to Shri Kishore Chandra Mohanty.

The M.S. University of Baroda has awarded the Ph.D. degree in Chemistry to Shri Natyarlal Dayaram Jadav; Ph.D. degree in Geology to Shri Bishal Nath Upreti; Ph.D. degree in Botany to Shri Shuban Kishen Rawal; Ph.D. degree in Geology to Shri Tanajirao Dnyandeo Thorat; Ph.D. degree in Zoology to Shri Mahesh Bhagvatprasad Jani.