

While the species are close enough to have retained the capacity to exchange their genetic content through pairing and crossing over in the heterozygous state, they are separated quite apart through genomic differences so as to retain their individual species status by the development of isolation barriers, mostly concerned with post-zygotic imbalances.

These conclusions are comparable to those arrived at in the differentiation of *S. melongena*, *S. surattense* and *S. trilobatum*^{8,9}. Thus structural repatterning of chromosomes, besides assemblage of adaptive genes for species differentiation seems to have played an important role in the divergence of the different spinous Solanum species. The nature and extent to which such phenomena distinguish the different species in question will be considered elsewhere.

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EFFECT OF JUVENILE HORMONE ANALOGUES ON REPRODUCTION IN THE CRICKET, *GRYLLODES SIGILLATUS* WALKER

JUVENILE hormone analogues inhibit fecundity and fertility in the wasp, *Habrobracon juglandis*¹ and the mosquito, *Aedes aegypti*². Similarly application of JH analogues produced several ovarian defects and also embryonic disorders in the firebrat, *Thermobia domestica*³. Transmission of JH analogues during copulation inhibiting fertility was observed in *Dysdercus cingulatus*⁴, *Pyrrhocoris apterus*⁵, and *Dysdercus koenigii*⁶. The present investigation was conducted to know the effects of JH analogues on reproduction in the cricket, *Grylloides sigillatus*.

Two JH analogues namely R-20-3600 (Hoffmann-La Roche) and R-20458 (Stauffer Chemical) were used to conduct Experiments I and II respectively on crickets. Freshly ecdysed (0-24 hr) male and female were selected from the stock culture provided with concentrated poultry feed, water vial and strips of folded filter papers. The sexes were separated earlier at their nymphal stages. The selected crickets separately treated with 1 μ l of each JH analogue were kept isolated for three days. Combinations of males and females constituted different groups as follows:

- A. Treated male with treated female
- B. Treated male with normal female
- C. Normal male with treated female
- D. Normal male with normal female (Control).

There were ten pairs of male and female crickets in each group of each experiment. They were later incubated at $30 \pm 1^\circ \text{C}$ and supplied with sterilised sand cups to collect eggs for 2 weeks. The eggs were transferred to filter paper and incubated at $35 \pm 1^\circ \text{C}$. Nymphs hatched out were recorded and the per cent hatchability was calculated. In both the experiments, the treated males mated normally, the treated females laid good number of normal eggs and showed no ovarian defects. Average per cent hatchabilities in the groups A, B, C and D were 82.5, 87.6, 87.4 and 92.0 in Experiment I and 85.4, 91.8, 84.8 and 89.4 in Experiment II. Obviously there was no significant difference in hatchabilities between any two treatments.

The available literature reveals that the JH analogues applied to male, transmitted to female during copulation and inhibited the egg hatchability^{5,6}. When administered orally to the female mosquito, *Anopheles stephensi*, they lead to the development of abnormal eggs and prevented hatchability⁷. Our results when compared to these, are quite interesting. The JH analogues affected neither the oogenesis nor spermatogenesis in *G. sigillatus*. Since the treated males could as well produce viable sperms as the controls, the finding supports the view that the spermatogenesis may not be under the endocrine control⁸. Further, as the gonadal differentiation in *G. sigillatus* takes place earlier to the adult emergence, the application of JH analogues to the adults may not affect the reproductive organs.

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NEW DRAGONFLY RECORDS FROM INDIA AND THE DEHRA DUN VALLEY (NORTHERN INDIA)

FROM a large collection of Odonata, made during the period 1974-78, nine new records were found for the fauna of the Dehra Dun valley. The valley is unique in its fauna and flora many of which are characteristically endemic and scientifically interesting. New records of dragonflies have been

earlier brought-out by Fraser,¹⁻³ Kumar⁴ and Tyagi⁵ bringing their number to a total of nearly sixty species and subspecies in the valley. In the present note nine dragonflies are included, referable to 111 genera and seven families of two suborders, Zygoptera and Anisoptera. These are *Calicnemia* cf. sp., *Ischnura aurora aurora* Brauer, *Onychogomphus* Selys, *Caconeura autumnalis* (Fraser), *Drepanosticta schmidti* Fraser, *Gynacantha byakina* Selys, *Tetrathemis irregularis* Brauer subsp., *Zygonyx torrida* (Kirby) subsp. and *Crocothemis servilia* Drury subspecies. Of these the last three are also the new records for the dragonfly fauna of India.

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AWARD OF RESEARCH DEGREES

The Maharaja Sayajirao University of Baroda, Baroda, has awarded the Ph.D. degree in Archaeology to Sri Syed Anis Hashim; Ph.D. degree in Biochemistry to Sri Devendra Ramchandra Deshmukh and Sri Ram Kumar Sindhu.

Sri Venkateswara University, Tirupati, has awarded the Ph.D. degree in Botany to Sri C. S. Prabhakar Naidu; Ph.D. degree in Zoology to Sri D. Chengalraju, Sri S. Kondaiah and Sri K. Radhakrishnaiah.

Utkal University, Bhubaneswar, has awarded the Ph.D. degree in Botany to Sri Manoranjan Kar; Ph.D. degree in Chemistry to Smt. Bidyabati Misra, Sri Santosh Kumar Mandal and Sri Swoyam Prakash Rout.

Berhampur University has awarded the Ph.D. degree in Chemistry to Sri M. Durga Prasad Rao; Ph.D. degree in Anthropology to Sri Paresh Nath Sahu.