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Department of Genetics, AVTAR SINGH.
Punjab Agricultural University, DALBAR SINGH.
Ludhiana.

and
Department of Botany, R. P. ROY.
Patna University,
Patna-5, Bihar, October 27, 1972.

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SHORT SCIENTIFIC NOTES

Karyotype and Sex-Mechanism in Four Species of Tenebrionid Beetles

The present report provides cytological information about four species of beetles (Table I). Two of them constitute an addition to our knowledge about the family Tenebrionidae, which has been known cytologically by forty-four species¹⁻⁸.

TABLE I
Karyotype and sex-mechanism in four species* of the family Tenebrionidae

Species	Sex	Karyotype	Sex-mechanism
Family: TENEBRIONIDAE			
1. <i>Alphitobius diaperinus</i>	♂	2n = 19 (17 metacentrics + 2 submetacentrics)	XO
2. <i>Tribolium castaneum</i>	♂	2n = 20 (9 metacentrics + 11 acrocentrics)	XY _p
3. <i>Rhytinota</i> sp.	♂	2n = 20 (15 metacentrics + 2 submetacentrics + 3 acrocentrics)	XY _p
4. <i>Opatroides vicinus</i>	♂	2n = 21 (19 metacentrics + 2 acrocentrics)	XY ₁ Y ₂

* The different species have been identified by Forest Research Institute, Dehradun.

Opatroides vicinus had been worked out earlier by Dutt¹ and he reported its diploid number as 20 (4 metacentrics + 16 acrocentrics) with XY_p type of sex-mechanism. During the present studies on the same species from Chandigarh, however, a diploid number of 21 chromosomes (19 metacentrics + 2 acrocentrics) with a multiple sex-mechanism, i.e., XY₁Y₂ has been observed. This numerical difference with regard to the autosomes or sex chromosomes at the specific level seems to be the result of certain ecological conditions for the two different populations of this species.

Department of Zoology,
Panjab University,
Chandigarh.
February 16, 1973.

G. P. SHARMA.
S. M. HANDA.
SUMAN SHARMA.

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Blood Pressure Preparations in Albino and Field Rats in the Assay of Acetylcholine

Previous workers have shown that rat blood pressure is a suitable method for the estimation of low concentrations of acetylcholine in test samples^{1,2}. In routine course of investigations on the release of acetylcholine in biological fluids from animals both in sleep and wakeful states³, and also on human placental release of acetylcholine both in incubation and on perfusion⁴, albino rat (witser strain—410 preparations) as well as field rat (*Millardia mettada*—540 preparations) blood pressure preparations⁵ indicated the following differences in preparation, maintenance and response to acetylcholine (Table I).

The preparation in field rats is of help in routine and prolonged estimations of 3 point and 4 point assay and in large number of acetylcholine test samples whereas the albino rat preparation is suitable for measuring minute concentrations of acetylcholine as it can be maintained only for a short duration. The house rat (*Rattus rattus*—50 preparations) preparations also yield results similar to field rats when mounted for measuring acetylcholine.

TABLE I

Differences in preparation, responses and maintenance of albino and field rat blood pressures during acetylcholine estimations:

Albino rat	Field rat
Handy and can be anaesthetized with ease.	Fierce and requires more careful handling during anaesthesia.
In pithed preparations mortality is more in ether anaesthesia.	Mortality is not frequently seen.
Highly vascular.	Limited vascularity.
More fascia (arterial and venous wall tensile).	Less fascia (arterial and venous wall brittle).
More bleeding during and after preparation.	Less bleeding during and after preparation.
Evisceration is complex.	Evisceration is simple.
Highly sensitive and sometimes responds to 10^{-10} and 10^{-11} (g/ml) acetylcholine.	Responds to 10^{-9} and 10^{-8} (g/ml) acetylcholine.
Maintenance can only be for a short duration (about 2 hrs after preparation).	Can be maintained for longer periods (about 4-6 hrs after preparation.)
Unsteady blood pressure in light anaesthesia.	More steady blood pressure irrespective of light anaesthesia.
Tracheal secretions more frequent and excessive.	Less tracheal secretions and hence no tracheal obstruction.
Sensitivity changes less frequent during the course of the assay.	Sensitivity changes more frequent during the course of the assay.

Since rat blood pressure has become a common tool in laboratories doing research on neurohumours and also for the fact that the assays are usually done on albino rats, the above points would help those who could not rear a colony of albino rats due to lack of facilities of an animal house and also for choosing suitable preparations.

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Dept. of Pharmacology, H. VENKATAKRISHNA-BHATT,
Kurnool Medical College,
Kurnool-2 (A.P.),

and

Dept. of Physiology, A. KRISHNAMURTY.*
Andhra Medical College,
Visakhapatnam-1 (A.P.),
January 15, 1973.

* Present address: Department of Pharmacology, Kurnool Medical College, Kurnool 518002 (A.P.),

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A Post-Harvest Fruit Rot of *Citrus reticulata* Blanco

A severe disease of orange was observed in various fruit markets of Rajasthan in January, 1973.

Externally infected fruits appear sound and healthy; in rare cases small black spots were observed on the skin at the stem ends of the fruits. Fruits when opened were found to have an extensive rotting area in the core located either in the centre or starting from the stem or navel end and extending towards the centre. In primary stage light-green fungal growth was observed in the hollow space of the core of the fruit. Finally with advance of the disease olive-green growth was common and hyphae penetrated slowly in the pulp sacs and destroyed the whole fruit. The disease causes soft rot of the fruits which emit a fermented odour.

Microscopic examination of the fungal growth as well as isolations from infected regions revealed that the disease was caused by *Pullularia pullulans* (de Bary) Arnaud. The fungus grows well on P.D.A. slants at 25° C. Colonies shining dark-green with slimy moist appearance. Mycelium black; hyphae greenish-black, branched, septate, 7.5-10 μ wide, composed of dark thick-walled cells, connected by strands of lighter coloured thin-walled chlamydospores, 5.5-11 \times 13.0-15.0 μ , forming sterigmata, which function as conidiophores; conidiophores terminal or lateral, hyaline, with variable length, bearing conidia in chains; conidia hyaline, oval to elongate, 1-celled, 5.5-20.0 \times 2.5-3.0 μ .

Pathogenicity of the organism was confirmed by inoculating the citrus fruits by Granger and Horne's¹

method and also by spraying the conidial suspension of the organism over the injured and uninjured fruits. Only injured fruits developed typical symptoms. Reisolations made from artificial infected fruits yielded the pure cultures of *Pullularia pullulans*. Pathogenicity of the isolated of *P. pullulans* from madarin orange was also tested on lemon, lime and tomato. It gave positive results.

Mycology and Plant Pathology Laboratory,
Department of Botany,
University of Jodhpur,
Jodhpur, India, February 12, 1973.

K. S. PANWAR,
N. L. VYAS.

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Rhaetic Conodonts from the Niti Pass Region, Painkhanda, Kumaun Himalayas

This note records the presence of a Rhaetic conodont fauna from rock samples collected by Dhoundial and Jangpangi in 1953 from the Mesozoic sequence of Chhota Hoti, near Shalshal cliff in Painkhanda, Kumaun Himalayas. In this area, the only other report of conodonts is from the Middle Trias (Misra, Sahni and Chhabra 1972)². The main significance of this find is two-fold: firstly, the conodonts being of Rhaetic age are the youngest so far reported from India; secondly, the specimens are specifically identical to a rare species *Neospathodus lanceolatus* (Mosher, 1968)³ described from the Rhaetic of Europe. Rhaetic conodonts have an extremely low frequency of occurrence approximating to 1 specimen per kilogram of matrix.

The specimens belong to a single species *Neospathodus lanceolatus* which is characterised by four denticles directed posteriorly of which the posteriormost is the largest. The denticles are fused at the base but are well differentiated, acutely pointed toward the apex. A prominent basal cavity which flares posteriorly, is present.

The stratigraphic position of the conodont fauna is in a bioclastic grey arenaceous limestone representing the Megalodon Limestone which is considered by Diener (1912)¹ to be Rhaetic in age. Associated with the conodonts are poorly preserved ammonites and foraminifera. The foraminifera which are more common than the

conodonts have been tentatively assigned to the genus *Stensioina* (family Discorbidae).

Geology Department,
Lucknow University,
Lucknow, February 16, 1973.

ASHOK SAHNI,
INDRA PRAKASHI.

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The Distribution of the Microhylid Frog, *Ramanella variegata* (Stol.) (Amphibia: Microhylidae)

Recently I picked up two narrow mouthed frogs from under-stones on St. Thomas Mount, Madras, which were recognised as *Ramanella variegata* (Stol.). Prior to this, a single specimen of this frog was obtained in 1966 from the same area. Boulenger (1882) has entered four specimens in his *Catalogue of the Batrachia, Salientia, S. ecaudata of British Museum* from Yellagiri Hills, Bhadrachalam and Godavary Valley under *Callula olivacea*. Thurston, Superintendent of Government Museum, Madras (*Catalogue of Batrachia, Salientia and Apoda of South India*, 1888, p. 42, Fig. 4) refers to a specimen said to have been found by J. R. Henderson in his compound in Madras. Boulenger in his fauna volume (1890:494) gives the distribution of this species as 'Peninsular India as far north as Godavary and Ceylon.' Parker (1934:93-94) in his *Monograph of the Frogs of the Family Microhylidae* gives its range as S. India (as far north as Godavary Valley). Still recently Daniel [1963: *J. B. Nh. Soc.*, 60 (2), 700-1] says this species is 'rare, recorded mainly from Eastern Peninsular India, up to Chanda in M.P.'

However, the present records of this species specifically from St. Thomas Mount, Madras, prove that this frog is not as rare as hitherto believed. Further investigations elsewhere may yet testify the wide-spread occurrence of this interesting microhylid whose habits are little known.

Southern Region Station,
Zoological Survey of India,
Madras-4, Tamil Nadu,
February 18, 1973.

T. S. N. MURTHY.