

## A NEW SPECIES OF THE GENUS *Danio* HAMILTON FROM INDIA (PISCES: CYPRINIDAE)

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JAYARAM<sup>1</sup> recorded 8 species of the genus *Danio* Hamilton under subgenus *Brachydanio*. Barman<sup>2</sup> described another species under this subgenus from Burma. During the course of studies on the cyprinid fishes of the genus *Danio* Hamilton from India and Burma, the material collected from Arunachal Pradesh, India was traced to this subgenus and this is hitherto undescribed. The species is described here and named after the late Dr. S. L. Hora, the eminent ichthyologist and ex-Director, Zoological Survey of India.

### SYSTEMATIC ACCOUNT

Order — Cypriniformes  
 Family — Cyprinidae  
 Genus — *Danio* Hamilton  
 Subgenus — *Brachydanio*  
*Danio (Brachydanio) horai* sp. nov.

**Material:** Holotype (Figure 1): 24 mm. in standard length. Reg. No. Zoological Survey of India, Calcutta FF1827. Locality: Arunachal Pradesh, India, Coll. S. Biswas and S. Saha. Date: 12 April, 1981.



Figure 1. Lateral view of holotype *Danio (Brachydanio) horai*.

Paratypes: 9 exs., 21 mm. — 28 mm. in standard length. Reg. No. Zoological Survey of India, Calcutta FF1828. Locality: collector and date same as in holotype.

**Diagnosis:** Lateral line and barbels absent, longitudinal row of scales 28-30 and transverse row scales 7, Predorsal scales 14, head length 3.62 (3.28-4.00) and body depth 3.53 (3.11-3.85) in the standard length, eye diameter 3.84 (3.50-4.66) in head length.

**Description:** *Danio (Brachydanio) horai* sp. nov. D. 2/7, A. 2/12-13, p. 9, V. 7, C. 20.

*Danio (Brachydanio) horai* is a small fish not more than 28 mm. in standard length. Dorsal profile arched beyond the origin of dorsal fin and ventral profile arched beyond the vent. Head conical, length 3.62 (3.28-4.00) in standard length, height shorter than length. Eye diameter 3.84 (3.50-4.66) in head length, equal to or slightly longer than snout length and 1.51 (1.33-1.66) in interorbital width. Mouth obliquely directed upwards, lower lip longer than upper lip. Barbels absent. Body depth 3.53 (3.11-3.85) in standard length, almost equal to head length.

Dorsal fin with 2 spines and 7 branched rays, commences nearer to caudal base than to tip of snout and pelvic fin originates nearer to tip of snout than to caudal base. Anal fin with 2 spines and 12-13 branched rays. Pectoral fin longer than pelvic extending beyond origin of pelvic base. Lateral line absent. 28-30 scales in a longitudinal row and 7 rows transversely arranged. Predorsal scales 14. Minimum height of caudal peduncle 1.55 (1.33-2.00) in its length. There are 8 scales round the caudal peduncle. Caudal truncate or slightly emarginate, shorter than head length. The body and fins devoid of any colour band. Further data are given in table 1.

TABLE I

No. of specimens examined - 10.

Proportions	Range	Mean
Standard length/head length	3.28-4.00	3.62
Standard length/body depth	3.11-3.85	3.53
Head length/height of head	1.16-1.50	1.28
Head length/snout length	3.00-6.00	3.94
Head length/eye diameter	3.50-4.66	3.84
Interorbital width/eye diameter	1.33-1.66	1.51
Standard length/height of dorsal	3.28-4.00	3.66
Standard length/length of pectoral	3.83-4.80	4.27
Standard length/length of pelvic	4.60-6.00	5.14
Standard length/height of anal	3.83-4.80	4.27
Length of caudal peduncle/ minimum height of caudal peduncle	1.33-2.00	1.55

### Relationship

The present species *Danio (Brachydanio) horai* is distantly related to the three species of the subgenus *Brachydanio* viz. *Danio (Brachydanio) nigrofasciatus* (Day), *Danio (Brachydanio) rerio* (Hamilton) and *Danio (Brachydanio) choprae* Hora in the complete absence of lateral line. However, *Danio horai* may easily be separated from the above species in the

absence of barbels. These three species have barbels either one pair or two pairs. The species further differs morphologically from *D. nigrofasciatus* (Day), *D. rerio* (Hamilton) and *D. choprae* Hora in having no colour band on the body as well as on the fins.

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1. Jayaram, K. C., *The Freshwater Fishes of India, Pakistan, Bangladesh, Burma and Srilanka, Govt. of India.*, XXII + 475, plates XIII, 1981.
2. Barman, R. P., *On a new species of the genus Danio Hamilton from Burma, (Pisces: Cyprinidae). Bull. Zool. Surv. India (in press).*

## THE OCCURRENCE OF TREHALASE IN THE *EUBORELLIA ANNULIPES* (LUCAS) DERMAPTERA

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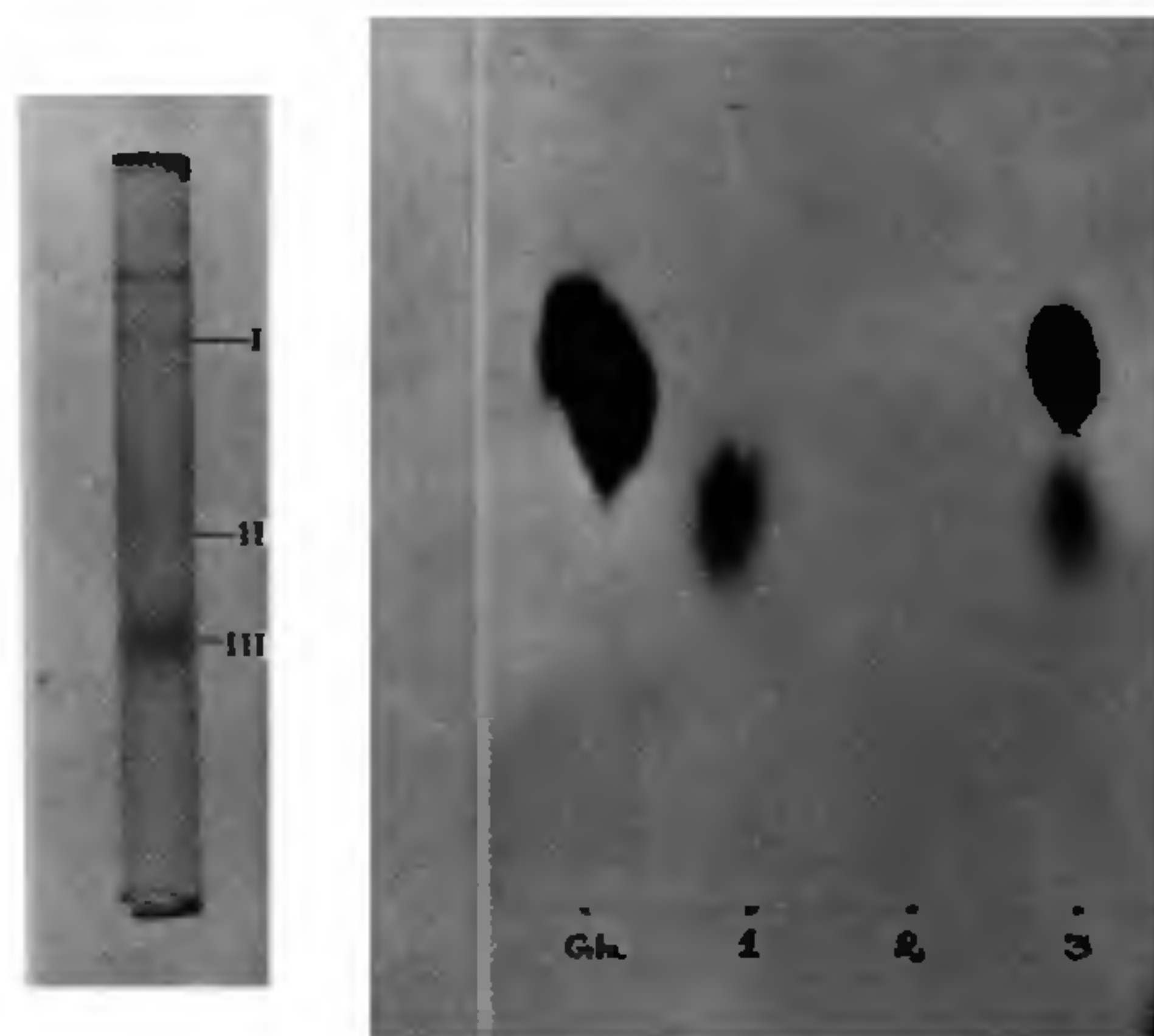
TREHALOSE, a major disaccharide in the blood of insects could not be detected in the haemolymph of New Zealand earwig *Anisolabis littorea*.<sup>1</sup> Paper chromatographic analysis of free sugar extracts of the whole body as well as the haemolymph and the reproductive tissues of male and female earwig *Euborellia annulipes* failed to reveal trehalose and showed glucose as the principal sugar.<sup>2</sup> However Moriarty<sup>3</sup> reported the occurrence of trehalose in low concentrations in a British species of earwig *Forficula auricularia* and observed that there is not much of an evidence to suggest that primitive insects lacked trehalose. The present study aims at the detection of trehalase, the enzyme responsible for the cleavage of trehalose (1-0- $\alpha$ -D-glucopyranosyl- $\alpha$ -D-glucopyranoside) to glucose, which would provide evidence for the occurrence or otherwise of trehalose in earwigs.

Colonies of *E. annulipes* were raised in the laboratory from locally collected specimens. The insects were reared on soaked dog biscuits and water *ad lib*.

The insects were anaesthetised by chilling, their thorax severed and the intestine removed. The abdomen of 25 insects thus obtained were ground in an all glass homogeniser in 0.03 M ice cold citrate buffer

(pH 6.5) containing 0.01 M phenyl thiourea. The homogenate was centrifuged at 12,000 g in a Remi T-24 centrifuge for 20 min. The supernatant was extensively dialysed against extraction buffer, for over 24 hr and used as the enzyme source. The trehalase activity was determined on polyacrylamide gels<sup>4</sup> using a modified trehalase specific disc gel stain method<sup>5</sup> After a 90 min run the gels were incubated in 0.01 M trehalose solution for 20 min at the end of which the enzyme activity was arrested by washing the gels in distilled water and transferring them to a 0.1 M iodoacetamide solution for 8 min. After a final rinse with distilled water, the gels were immersed in freshly prepared 0.1 M tetrazolium red in 0.5 M NaOH and heated in a boiling water bath for 1.5 to 2 min with mild agitation. Red bands appear wherever aldose sugars are present.

The results were further confirmed by paper chromatography. 2% trehalose was incubated with enzyme source for 60 to 90 min at 37°C at the end of which the incubation mixture was analysed for the hydrolytic product, *viz.*, glucose by paper chromatography<sup>6</sup> Incubation mixture without the substrate or enzyme source was used as controls. Glucose solution (2%) was also cochromatographed.



**Figure 1** Electropherogram of the crude abdominal extract of *E. annulipes*. Gel stained specifically for trehalase. I, II and III indicate the multiple molecular forms of trehalase.

**Figure 2** Paper chromatogram showing the formation of glucose ( $\mu$ g per spot) from trehalose incubated with the crude abdominal extract of *E. annulipes* at 37°C in citrate buffer. (Glu) Glucose. 1. Control without extract. 2. control without trehalose, and 3. experimental.