

Kerala, at an altitude of 650 m. On a close examination, this specimen has turned out to be *O. thwaitesii* Hk. f., which has hitherto been considered as an endemic to Sri Lanka. The present report is, therefore, a new record of this species for the Indian sub-continent and hence an addition to the Orchid flora of India.

O. thwaitesii is closely related to *O. verticillata* Wight, in some of its external features. However, it can be easily distinguished from the latter by its cuneiform-obcordate lip that is 3-lobed, side lobes that are small, orbicular and lengthening beyond the column and the 2-lobulate midlobe with an obtuse sinus in between (figures 1-4).

Lindley⁶ considered this taxon as a variety of *O. verticillata*, viz., *O. verticillata* var. *pubescens*, but this was later raised by Hooker¹ to the rank of a species. Specimens examined: Kerala. Quilon district, Thenmalai, at an altitude of 650 m, 8-6-1977, Sivadasan 15255 (CALI).

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ENDOCRINE CONTROL OF ACETYLCHOLINESTERASE ACTIVITY IN FRESHWATER FIELD CRAB, *OZIOTELPHUSA SENEX SENEX* (FABRICIUS)

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THOUGH the role of eye-stalk arising principle in crabs has been demonstrated earlier in spontaneous activity¹ phosphorylase activity² AChE activity³ and free amino acids⁴, attempts have not been made to evaluate the role of eye-stalk arising principle, on acetylcholinesterase activity in the nerve and muscle of the crab. Hence the present investigation was taken up.

Adult crabs of the species *Oziotelphusa senex senex*, were used. Since the organs secreting the neurosecretory substance are located in the eye-stalks, the organs were removed by extirpating the eye-stalks at the base without prior ligation. The eye-stalk extract was prepared according to Silverthorn⁵ and was injected in a dose equivalent to two eye-stalks through the arthroidal membrane at the base of the coxa of the first walking leg. AChE activity in the nervous system and the muscle was estimated according to Metcalf as given by Vijayalakshmi *et al*⁶. The enzyme activity is expressed as the μmol of ACh hydrolysed/mg protein/hr. The protein content in the tissues was determined⁷.

The eye-stalk extirpation caused a raise in AChE activity (table 1) both in nerve and muscle in 1-day post extirpated (1 PE) animals, followed by a drop in 2-day post extirpated (2 PE) and 4-day post extirpated (4 PE) animals. It is likely that the eye-stalk organs possessed a neurodepressant factor (NDF) the lack of which, due to removal of eye-stalks, could cause an elevation of AChE activity in 1 PE animals. Other biochemical parameters were similarly suggested earlier^{3,8,9}. Compensatory influence by other parts of the nervous system could in due course cause a decrease in AChE activity in 2 PE and 4 PE animals. The occurrence of NDF in thoracic and supra oesophageal ganglia was suggested earlier¹. However later studies proved that the brain and thoracic ganglion are free from NDF³. Depression of AChE activity upon injection of eye-stalk extract into control animals in the present study supports the presence of NDF in the eye-stalk organs. Since the nervous system has more levels

Table 1. AChE activity levels (μmol of ACh hydrolysed/mg protein hr) in the nerve and muscle of the crab, *O. senex senex* in eye-stalk ablated and eye-stalk extract injected conditions.

| Time | Nerve | Muscle |
|---------------------------------|---------------------------------|----------------------------------|
| Control | 0.1259 \pm 0.0014 | 0.0013 |
| Eye-stalk ablated (hr) | | |
| 24 hr | 0.1570 \pm 0.0069 (+24.7) | 0.00183 \pm 0.0007 (+37.59) |
| 48 hr | 0.1366 \pm 0.0075 (+8.498) | 0.00152 \pm 0.0004 (+14.2) |
| 96 hr | 0.0945 \pm 0.0027 (-24.9) | 0.00107 \pm 0.0006 (-19.5) |
| Eye-stalk extract injected (hr) | | |
| 24 hr | 0.2220 \pm 0.0027 (+76.8) | 0.0022 \pm 0.0004 (+65.4) |
| 48 hr | 0.0770 \pm 0.0084 (-38.8) | 0.00075 \pm 0.0001 (-45.1) |
| 96 hr | 0.1435 \pm 0.005 (+13.9) | 0.0015 \pm 0.0002 (+13.5) |

Values are mean of \pm S.D. of six individual observations and for each observation tissues from six animals were pooled up. Values in parentheses represent per cent change over the control. Values are statistically significant ($P < 0.001$) over the control.

of AChE activity than the muscle¹⁰, it is largely influenced by the eye-stalk extract¹¹. Thus the possible existence of NDF in the eye-stalk organs seems to have an inhibitory effect on AChE activity, probably inactivating the AChE by its indirect action on the ACh receptors¹².

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KARYOMORPHOLOGY OF A SEA-FROG *TETRAODON FLUVIATILIS* (TETRAODONTIDAE, PISCES)

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THE members of the fish family Tetraodontidae, also known as "Sea-frogs" because of their ability to inflate a portion of their oesophagus with air and for producing a noise when captured¹, have received limited cytological attention as only 14 species have so far been investigated².

The present communication deals with the diploid number, morphology and metrical analysis of chromosomes of a common sea-frog, *Tetraodon fluviatilis*, occurring in the Indian marine and brackish waters.

Eight living specimens of *T. fluviatilis* were collected from the estuarine creeks and crevices near Kakdwip, West Bengal, India. The sex of the specimens could not be identified. The kidney and gill tissues of the colchicized specimens were processed for preparation of somatic chromosomes according to the routine flame drying-Giemsa stain schedule³. The morphology of chromosomes was ascertained from mean measurement values of 3 well-spread complements employing the nomenclature suggested by Levan *et al*⁴.

The somatic metaphase complements (figures 1, 3) contained 42 chromosomes in 48 out of 52 cells examined. Therefore, the diploid number was considered to be 42. The karyotype (figure 2) revealed 21 pairs of homomorphic chromosomes. The chromosomes were very small and formed a graded series ranging from 1.18 to 0.42 μm . Because of their small