A. dadayi as its synonym. This genus comprises only two species, both are very rare in occurrence and prefer moist soils. In September 1979 in a soil sample collected from roots of water weeds (unidentified) from Govindghat, District Chamoli, Uttar Pradesh, a few specimens of *Adenolaimus* were found. Upon detailed study these were found to represent the type species and are described and illustrated here.

Adenolaimus Orthus (Thorne, 1939) Goseco *et al.*, 1975

Dimensions:

Female (6): L = 1·00–1·14 mm; a = 34–40; b = 4·7–5·4; c = 35–37; V = 25–27; G_2 = 17–19; odontostyle = 5–6 μm; odontophore = 17–19 μm; oesophagus = 209–220 μm; prerectum = 60–65 μm; rectum 15–16 μm; tail = 27–33μm; ABD = 20–21 μm.

Description:

Body almost straight upon fixation, tapering slightly towards the extremities. Cuticle and subcuticle finely striated. Lateral chords about one-fourth of body-width at midbody. Lip region continuous, rounded; liplets low. Stoma and pharyngeal walls supported by minute rod-like structures. Amphids small, oval, their apertures 3-4 μm wide. Odontostyle small, arcuate, about half lip-width long. Odontophore flanged, slightly sclerotized. Nerve ring encircling the oesophagus at 135–150 μm from anterior end. Basal bulb set off by a constriction 29–34 μm long and 15–16 μm wide, lumen with valvular chamber. Cardia rounded. Reproductive system mono-opisthodelphic. Vulva transverse. Vagina with wide lumen and distinct muscular walls. Anterior uterine sac completely absent, posterior branch normal. Prerectum about three anal body-widths long. Rectum less than one anal body-width long. Tail tapering uniformly to a blunt terminus, 1·4–1·6 anal body-width long.

Male: Not found.

Remarks: Adenolaimus orthus is known only from United States and eastern New Guinea. It is being reported here for the first time from India. The Indian specimens are similar to those reported earlier except that they have a slightly longer oesophagus (oesophagus = 150 μm in holotype).

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CHOLESTEROL METABOLISM IN *LOHITA GRANDIS* GRAY (HEMIPTERA: PYRRHOCORIDAE: INSECTA). EFFECT OF CORPORA ALLATECTOMY AND GARLIC EXTRACT.

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INSECTS need a dietary supply of sterol for their normal growth[1] due to their inability to synthesize sterols. The intracellular symbiotic flora of insects are also known to supply the required sterols to the host[2]. It is known that in insects, cholesterol is mainly used for the biosynthesis of ecdysone and other steroid hormones[2–4] and the conversion of cholesterol into such steroid hormones is under the control of prothoracic gland and neurosectory cells of brain[5–7]. The present investigation was therefore undertaken to determine the role of corpora-allata in the utilization of cholesterol in different tissues of allatectomized and garlic extract injected *Lohita grandis* (last nymphal instar, both sexes).

Nymphs of *L. grandis* were maintained in the laboratory at 25° C ± 2° C, 70% RH and 12 hr diurnal photoperiod and provided with 10% sucrose solution with the leaf juices on which the insects normally feed. The technique of Slama[8] was followed for allatectomy. The crude garlic extract was procured from Ranbaxy Laboratories (New Delhi) and was dissolved in double distilled water to obtain 5% and 10% solutions and were injected into the experimental insects at a dose of 20 μl/insect. A control is maintained by injecting the same dose of normal saline. The effect of both allatectomy and garlic extract was noted after 24 hr and 48 hr intervals. Haemolymph was obtained by puncturing the abdomen and collected in an ice-cooled centrifuge tube already coated with phenylthiourea to inhibit tyrosinase activity. The insects were dissected in ringer solution mixed with phenylthiourea to get the required experimental material. Cholesterol content was measured spectrophotometrically by the method of Zaltikis *et al*[9].

The results of tables 1 and 2 show that the testis and the fat body in males and higher levels of cholesterol than the ovary and the fat body in females while the cholesterol level in haemolymph of female was higher than that in the males. Allatectomy in both sexes led to an extra accumulation of cholesterol while the opposite was true in garlic extract-injected insects. Crude garlic extract was most effective as compared to the other dilute doses though injection of crude extract resulted in a high mortality rate.

Allatectomy is directly attributed to the absence of juvenile hormone in the body and the close functional

TABLE 1

Cholesterol contents in haemolymph (µg/0·01 ml) and fat-body (µg/mg dry tissue weight) in control, allatectomized and garlic extract inject L. grandis + SE (n = 27)

Tissues & Sex	Control	Allatectomized insects 24 hr.	Allatectomized insects 48 hr.	Garlic extract injected insects 5% 24 hr	Garlic extract injected insects 5% 48 hr	Garlic extract injected insects 10% 24 hr.	Garlic extract injected insects 10% 48 hr.	Crude extract 24 hr.	Crude extract 48 hr.	CD* value at 5% level
Haemolymph										
Male	13·16 (0·97)	23·47 (0·32)	25·02 (0·16)	9·89 (0·12)	9·13 (0·52)	8·95 (0·33)	8·02 (0·62)	7·92 (0·17)	7·25 (0·03)	0·98
Female	16·92 (0·06)	31·18 (0·09)	32·70 (0·11)	40·33 (0·14)	14·02 (0·21)	14·19 (0·21)	14·05 (0·03)	13·92 (0·35)	13·02 (0·14)	1·18
Fat body Male	51·08 (0·20)	81·30 (0·17)	85·05 (0·33)	29·86 (1·20)	27·99 (1·35)	27·76 (0·59)	27·39 (1·28)	24·65 (1·96)	22·90 (1·25)	2·92
Female	26·06. (0·31)	28·81 (0·26)	30·89 (0·33)	18·05 (0·12)	18·62 (0·79)	17·21 (0·66)	16·21 (1·09)	14·99 (0·62)	14·26 (1·65)	1·95

*CD = Critical difference, Number within the parentheses indicates ± S.E.

TABLE 2

Cholesterol contents in intestine, testis and ovary (µg/mg dry tissue weight) in control, allatectomized and garlic extract injected L. grandis. ± SE (n = 27)

Tissues & Sex	Control	Allatectomized insects 24 hr	Allatectomized insects 48 hr	Garlic extract injected insects 5% 24 hr	Garlic extract injected insects 5% 48 hr	Garlic extract injected insects 10% 24 hr	Garlic extract injected insects 10% 48 hr	Crude extract 24 hr	Crude extract 48 hr	CD* value at 5% level
Instestine										
Male	3·10 (0·29)	8·55 (0·12)	12·71 (0·11)	2·80 (0·13)	2·09 (0·08)	2·07 (0·02)	2·02 (0·01)	2·02 (0·21)	2·12 (0·05)	0·81
Female	4·17 (0·06)	5·69 (0·07)	13·70 (0·66)	3·11 (0·06)	3·05 (0·52)	3·01 (0·01)	3·02 (0·12)	2· 91 (0·08)	2·02 (2·26)	0·91
Testis	13·43 (0·11)	18·99 (1·12)	19·66 (0·11)	12·02 (0·01)	11·18 (0·16)	11·05 (0·08)	11·11 (1·20)	9·15 (1·02)	8·88 (2·26)	1·38
Ovary	6·74 (0·02)	13·63 (0·63)	15·89 (0·07)	5·34 (0·09)	5·29 (0·01)	5·02 (0·62)	4·98 (0·19)	4·54 (0·33)	4·41 (1·20)	1·05

*CD = Critical difference, Number within the parentheses indicates ± S.E.

relationship between JH, and prothoracic gland[5] might result in low synthesis of ecdysone, which is reflected in the accumulation of cholesterol in allatectomized insects. Our results suggest sex and tissue specificity in the contents of cholesterol which ultimately corroborates the findings of earlier work[1]. Cholesterol is mainly utilized in insects for the synthesis of steroid hormone[10] which occurs mainly in prothoracic gland, fat bodies, gonads and partly in other tissues also[4,5,11–16] reported that garlic extract

has some antimicrobial action and the decrease in levels of cholesterol by garlic extract may be attributed to reduced microbial population in the tissues. It is also known that garlic extract mimics the effects of JH and ecdysone[17]. It may therefore be presumed that garlic extract disturbs the balance of both endogenous JH and ecdysone level which ultimately results in the decline of cholesterol level in different tissues[18].

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PRESENCE OF ELASTIN AND COLLAGEN IN THE INNER LINING OF THE OESOPHAGUS IN THE SHRIMP *ALPHEUS EDWARDSI* (AUDOUIN)

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IN studies on the systematics and histophysiology of the alpheid shrimps of Waltair Coast, it was possible to study some histochemical points of interest, with regard to the internal lining of the oesophagus in *Alpheus edwardsi*.

In *Alpheus edwardsi* the oesophagus is a very short tube running almost vertically at right angles to the long axis of the animal. The histological study on the oesophagus revealed that internally it is lined by two distinct layers, the outer thick layer and an inner hyaline layer. In most of the decapods so far investigated, these layers have been considered as chitinous and termed the outer layer as epicuticle and inner layer as endocuticle[1-6]. But the histochemical studies in the present investigations on the inner lining of the oesophagus revealed that, it is internally lined by an outer elastin layer and inner collagen layer.

The elastin and collagen layers follow the basement membrane and a layer of epithelial cells, formed of columnar cells. These cells are with clear cytoplasm and centrally placed nuclei.

Aldehyde-fuchsin a specific stain for elastin indicated that the outer layer is made of elastin (figure 1). This layer also exhibited a positive reaction to periodic acid/schiff (PAS) which was resistant to saliva digestion. To confirm the elastin nature of the outer layer, sections were also treated with verhoeff's stain and Unna's Orcein stain. The outer layer stained black with verhoeff's and red with Orcein, clearly elucidating the elastin nature of outer layer.

Similarly the inner layer of the oesophageal lining was confirmed as collagen layer after staining with Mallory's triple stain and Heidenhain's Azan technique (figure 2). Further confirmation was made by treating this layer with analine blue, which gave a very strong response (figure 3). With verhoeff's stain the inner layer stained red showing the presence of collagen. The presence of collagen was also established by using Van Gieson's stain The combination of Orcein and Van Gieson's stain, demonstrated the presence of elastin and collagen in the same section. A moderately positive reaction occurred with Luxol fast blue G in methonal for elastin and collagen.

Thus it could be concluded that the inner lining of