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## **FIRST REPORT OF FIVE OXYUROID NEMATODES OF COCKROACH (*PERIPLANETA AMERICANA* L.) FROM ANDHRA PRADESH, INDIA**

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### **INTRODUCTION**

Cockroaches are the principal and intermediate hosts of a variety of animal parasites specially nematodes and protozoa (Khairul & Paran, 1977). In India, many authors had reported different species of nematodes of cockroach (*Periplaneta americana* L.) from different corners of the country at different times. Major contributions were made by Basir (1940, 1956), Singh and Singh (1955), Farooqui (1967), Parveen and Jairajpuri, (1980,1981 and 1983), Duggal and Aulakh (1988, 1989), Singh and Kaur (1988), Sing and Sing (1989), Mathur and Khera (1989), Mojumder and Khan (1992), Rizvi and Jairajpuri (1995, 2002) and many others. Rao (1958) and Rao (1970) had also made some contribution on the nematode parasites of cockroaches from Andhra Pradesh.

During faunal survey tour to Andhra Pradesh from Nematelminthes section of Zoological Survey of India, Kolkata between the period of April 1998 to December 2002, the first author had collected five nematode species from *Periplaneta americana* L. from different localities of the state. All the species belong to the family Thelastomatidae under the order Oxyurida, and are described hereunder. These are being recorded for the first time from Andhra Pradesh.

### **MATERIALS AND METHODS**

The cockroach hosts, after their collection, were dissected and the guts were separated. The alimentary canal was opened into a petri dish with normal saline and observed under a binocular in low magnification. The parasites were collected into cavity block by a pipette, then fixed in hot (about 60°C) 70% alcohol. The nematodes were dehydrated by slow dehydration process i.e. by

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keeping the materials into dessicator for two weeks. After that the specimens were mounted on glass slides in anhydrous glycerol; then examined under microscope. Measurements were taken by an ocular micrometer. De Man's Formula (1884) was used for dimensions.

## DISCUSSION

### 1. *Schwenkiella periplaneticola* Parveen and Jairajpuri, 1981

*Measurements* : FEMALE (n = 4) : L = 2.5–3.2 mm; a = 14.7–16.0; b = 5.9–6.3; c = 2.9–3.4; V = 49.6–50.31. MALE : Not found.

*Description* : FEMALE : Cylindrical body, tapering at both the ends; measures 2.5–3.2 mm in length and 0.17–0.20 mm in maximum width. Cuticle annulated. Mouth surrounded by eight labio-papillae. Buccal cavity small, measures 0.011–0.014 mm long and 0.004–0.006 mm wide. Oesophagus long (0.42–0.51 mm) with a cylindrical corpus (0.31–0.35 mm × 0.03–0.04 mm), a short isthmas (0.03–0.04 mm × 0.04 mm) and an end valbular bulb (0.08–0.10 mm × 0.07–0.09 mm). Nerve ring 0.17–0.21 mm from anterior end of the body. Excretory pore post-oesophageal, 0.48–0.55 mm from anterior extremity. Vulva equatorial in position. Ovaries divergent. Tail long, filiform, about one-third of body length, measures 0.85–0.93 mm. Eggs oval in shape, measuring 0.051–0.084 mm × 0.049–0.058 mm in diameter.

*Habitat* : Posterior intestine.

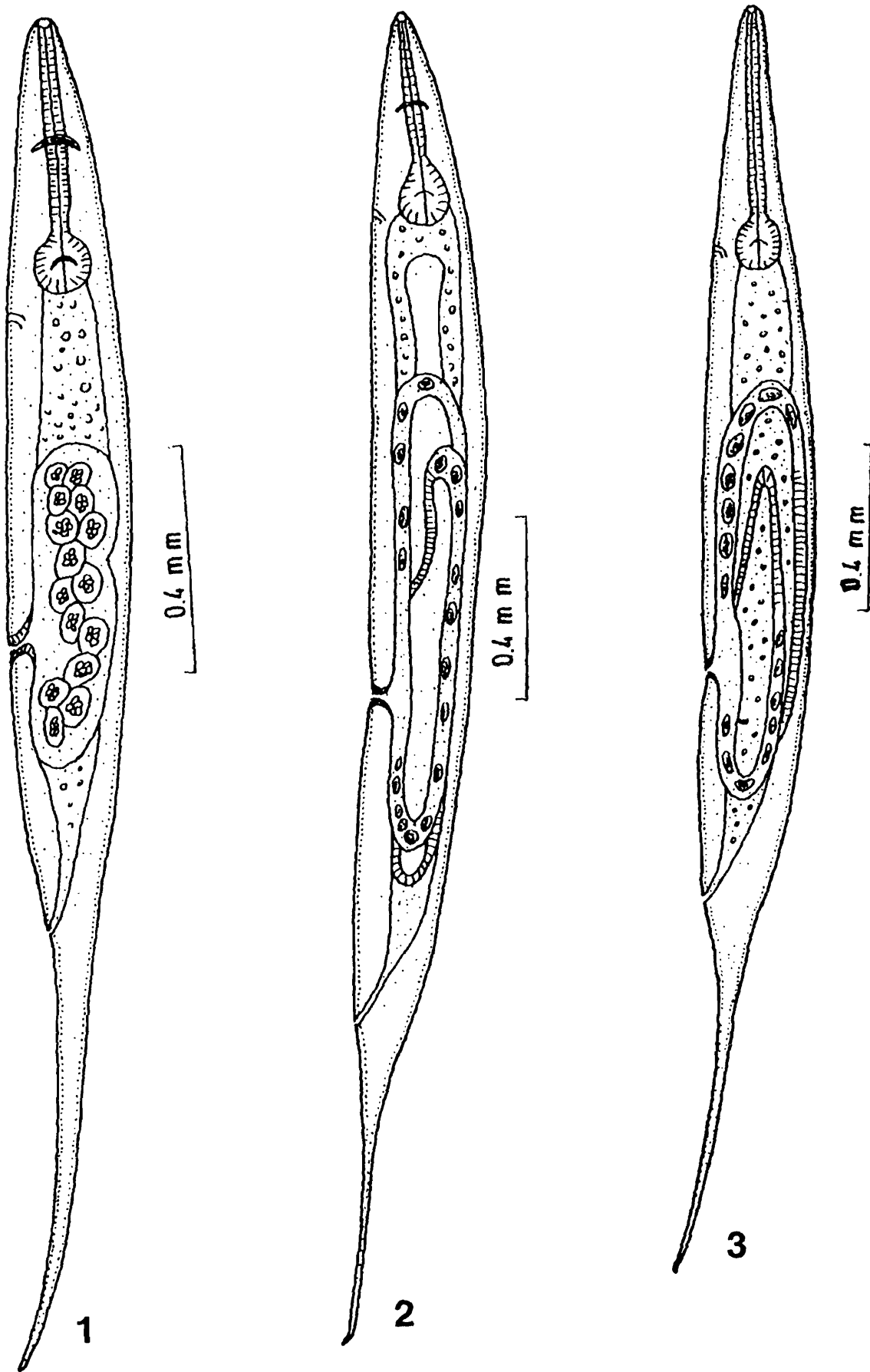
*Locality* : Rajamundry, Dist. East Godavari.

*Remarks* : The present specimens show close resemblances with measurements and description, made by original author, Parveen and Jairajpuri, 1981. The species was described from Aligarh, Uttar Pradesh.

### 2. *Schwenkiella basiri* Parveen and Jairajpuri, 1980

*Measurements* : FEMALE : (n = 12) : L = 2.56–3.24 mm; a = 12.2–13.5; b = 5.8–6.6; c = 3.7–4.5; V = 47.3–49.6. MALE : Not found.

*Description* : FEMALE : Cylindrical body measuring 2.56–3.24 mm in length and 0.21–0.24 mm in width. Cuticle transversely annulated. Mouth opening surrounded by eight labio-papillae. Buccal cavity small, 0.015–0.016 mm deep and 0.014–0.015 mm wide. Oesophagus 0.44–0.49 mm long; divided into anterior corpus (0.32–0.37 mm × 0.03–0.06 mm), middle isthmus (0.03–0.04 mm × 0.033–0.036 mm) and posterior bulb (0.11–0.13 mm × 0.11–0.12 mm). Nerve ring at 0.23–0.26 mm from anterior end of the body. Excretory pore post-oesophageal, 0.54–0.58 mm from head end. Reproductive system didelphic; vulva more or less equatorial in position, vagina directed slightly anterior to the body. Eggs ellipsoidal, 0.07–0.09 mm × 0.05–0.06 mm in diameter. Anus at about 0.68–0.72 mm from posterior extremity. Tail long, filiform, about one-fourth of the body length.



Figs. 1-3. 1. *Schwenkiella periplaneticola* : Entire female. 2. *Schwenkiella basiri* : Entire female.  
3. *Thelastoma guptai* : Entire female.

*Habitat* : Intestine.

*Locality* : Guntur, Dist. Guntur.

*Remarks* : The present specimens conform well with the description and measurements given by Parveen and Jairajpuri, 1980. The species was described and illustrated as new to science by them from North India.

### 3. *Thelastoma guptai* Duggal and Aulakh, 1989

*Measurements* : FEMALE : (n = 11) : L = 3.52–3.67 mm; a = 12.2–12.6; b = 6.4–6.6; c = 4.1–4.2; V = 43.1–48.5. MALE : Not found.

*Description* : FEMALE : Body long, cylindrical, tapering at both the ends; 3.52–3.67 mm in length and 0.28–0.32 mm in maximum width. Cuticle uniformly striated up to anal region. Oesophagus long (0.54–0.56 mm), cylindrical; divided into anterior long corpus (0.41–0.42 mm), middle short isthmus (0.025 × 0.036 mm–0.028 × 0.037 mm) and end valvular bulb (0.102 × 0.105 mm–0.108 × 0.112 mm). Cardia distinct. Excretory pore at bulbal region, about 0.53–0.54 mm from anterior end of the body. Genital system amphidelphic. Vulva equatorial, 1.52–1.78 mm from head end. Eggs oval in shape, measures 0.07 × 0.04 mm–0.08 × 0.05 mm. Tail long, filiform, 0.86–0.90 mm in length.

*Habitat* : Rectum.

*Locality* : Medak, Dist. Medak.

*Remarks* : The present specimens are in agreement with the description and range of measurements, made by Duggal and Aulakh, 1989, who described and illustrated the species as new to science from Delhi.

### 4. *Thelastoma atheri* (Parveen and Jairajpuri, 1983) Rizvi and Jairajpuri, 1995

*Measurements* : FEMALE : (n = 8) : L = 2.52–3.02 mm; a = 15.7–15.9; b = 6.2–7.0; c = 3.5–3.6; V = 48.4–49.1. MALE : (n = 2) : L = 1.20–1.24 mm; a = 14.8–14.9; b = 6.6–6.7; c = 3.3–3.4.

*Description* : FEMALE : Body long, filiform, 2.52–3.02 mm in length and 0.16–0.20 mm in maximum width. Body becomes tapering towards both the extremities. Cuticle transversely annulated. Mouth surrounded by eight labio-papillae. Buccal cavity small, 0.013–0.014 mm long and 0.004 mm wide. Oesophagus long, cylindrical, measures 0.41–0.42 mm in length. It consists of anterior long corpus (0.311–0.315 mm long and 0.034–0.35 mm wide), middle short isthmus (0.031–0.034 mm long, 0.032 mm wide) and posterior bulb (0.82–0.087 mm × 0.085–0.088 mm). Cardia distinct. Nerve ring encircles corpus, 0.17–0.19 mm from anterior end. Excretory pore 0.47–0.51 mm from anterior extremity. Genital system didelphic, vulva slightly anterior to middle of the body. Eggs oval in shape, measures 0.073–0.075 mm × 0.051–0.052 mm in diameter. Tail long, filiform, 0.72–0.91 mm in length.

**MALE** : Body short, cylindrical, 1.20–1.24 mm in length and 0.081–0.083 mm in maximum width. Cuticle transversely annulated. Mouth surrounded by eight labio-papillae. Buccal cavity small, 0.012–0.013 mm long and 0.003 mm wide. Oesophagus 0.181–0.186 mm long, divided into anterior corpus (0.121–0.124 mm × 0.014–0.018 mm), middle short isthmus (0.014–0.016 mm × 0.011–0.012 mm) and end bulb (0.034–0.39 mm × 0.031–0.036 mm). Nerve ring and excretory pore 0.092–0.098 mm and 0.27–0.29 mm from anterior end of the body respectively. Testes single. Spicule not so distinct. Caudal papillae four pairs. Tail long, filiform, measuring 0.35–0.38 mm in length.

*Habitat* : Posterior intestine.

*Locality* : Tirupati-Tirumala, Dist. Chittoor.

*Remarks* : The present specimens show close similarities with the diagnosis and description of *Thalastoma atheri* Rizvi and Jairajpuri, 1995. *T. atheri* was a new combination, proposed for *Schwenkiella atheri* Parveen and Jairajpuri, 1983; and was described from Aligarh of Uttar Pradesh State.

#### 5. *Thalastoma kherai* Duggal and Aulakh, 1989

*Measurements* : FEMALE : (n = 7) : L = 2.81–2.93 mm; a = 14.7–15.4; b = 5.5–5.6; c = 3.4–3.6; V = 49.8–49.9. MALE : (n = 1) : L = 1.06 mm; a = 12.7; b = 4.6; c = 3.3.

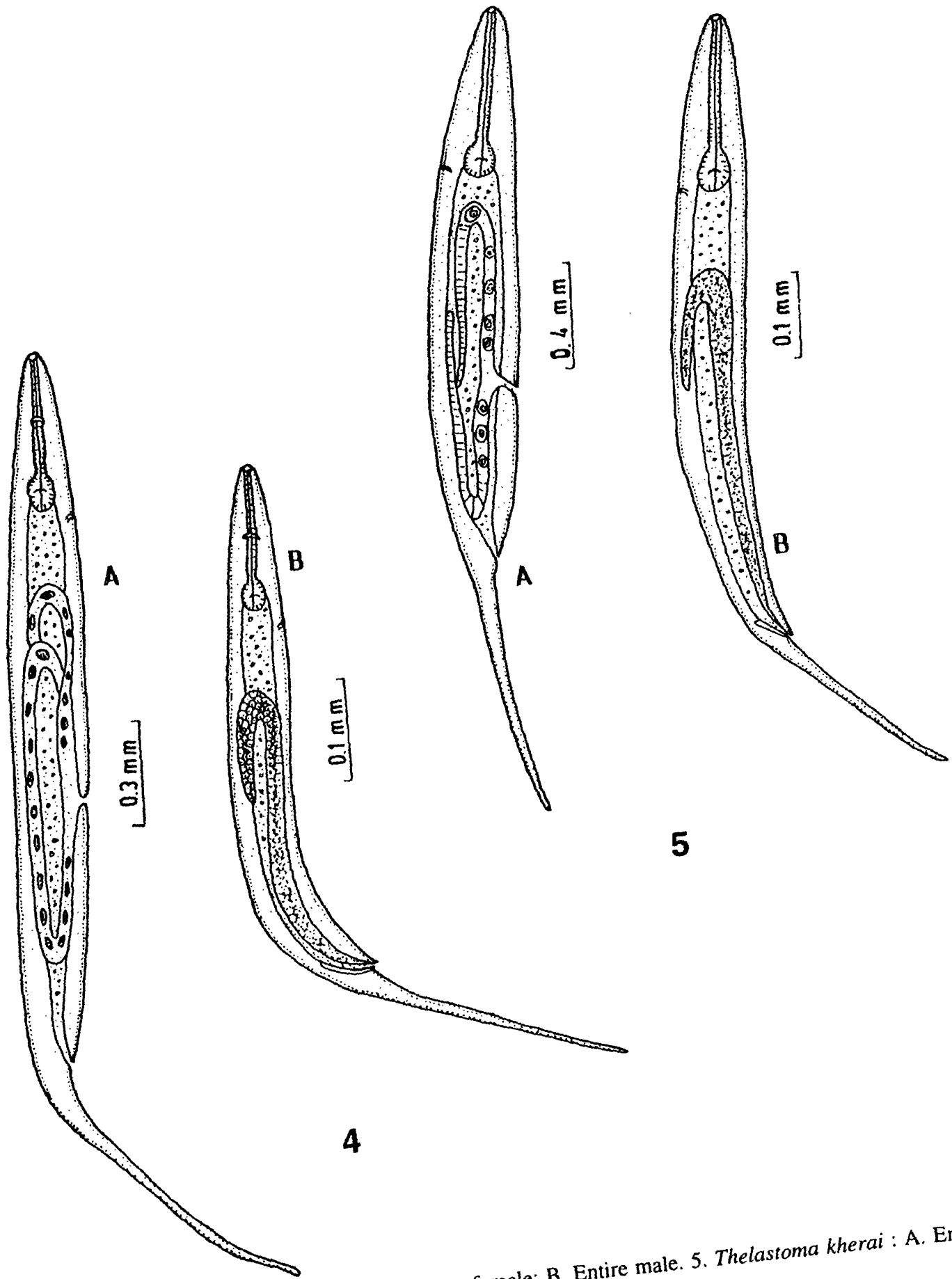
*Description* : FEMALE : Body long, more or less straight, cylindrical, measuring 2.81–2.03 mm long and 0.190–0.192 mm wide. Cuticle striated uniformly up to anus. Oesophagus long, cylindrical, measures 0.51–0.53 mm; divided into anterior long corpus (0.39–0.42 mm × 0.03–0.04 mm), middle short isthmus (0.027–0.029 mm × 0.031–0.032 mm) and end rounded bulb (0.093–0.095 mm × 0.093–0.094 mm). Excretory pore at bulbal region, measures 0.517–0.519 mm from anterior extremity. Reproductive system didelphic. Vulva at about middle of the body, 1.40–1.46 mm from head end. Eggs oval in shape, 0.075 × 0.052 mm–0.080 × 0.053 mm in diameter. Tail long filiform, measuring 0.83–0.85 mm in length.

**MALE** : Body short, straight, 1.06 mm in length and 0.082 mm in width. Striation present up to anal region. Oesophagus 0.23 mm long with spindle-shaped corpus (0.018 × 0.024 mm) and rounded end bulb (0.047 × 0.048 mm). Cardia present. Testis single and reflexed. Spicule single, 0.062 mm long. Tail long, filiform, 0.32 mm in length.

*Habitat* : Rectum.

*Locality* : Nandyal, Dist. Karnool.

*Remarks* : Present specimens closely conform well to the original species, described as new form by Duggal and Aulakh, 1989, in all measurements and diagnosis. The new species was described from Delhi.



Figs. 4-5 : 4. *Thelastoma atheri* : A. Entire female; B. Entire male. 5. *Thelastoma kherai* : A. Entire female; B. Entire male.

## SUMMARY

Five species of parasitic nematodes of cockroach (*Periplaneta americana* L.) under the order Oxyurida namely, *Schwenkiella periplaneticola* Parveen and Jairajpuri, 1981, *S. basiri* Parveen and Jairajpuri, 1980, *Thelastoma guptai* Duggal and Aulakh, 1989, *T. atheri* (Parveen and Jairajpuri, 1983) Rizvi and Jairajpuri, 1995 and *T. kherai* Duggal and Aulakh, 1989 have been described herein. These species are being recorded for the first time from Andhra Pradesh.

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