



**REDISCRPTION OF ENTOMOPARASITIC NEMATODE THELASTOMA BULHOESI (DE MAGALHES,1900) FROM AMERICAN COCKROACH PERIPLANETA AMERICANA (LINNAEUS,1758) (BLATTEDAE:BLATTIDAE) IN AURANGABAD .**

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**ABSTRACT**

The American cockroach *periplaneta americana* is found worldwide and successfully adapted to living with humans. It is carrier of many disease causing parasites. There are many reports of thelastomatid parasitic nematodes isolated from *Pamericana* in many countries. Cockroaches collected from different localities of Aurangabad. *Thelastoma bulhoesi* polulation was detected from hind gut of *Pamericana*. The morphological characterization of entomoparasite is compared with previous record.

**KEYWORDS :** Aurangabad , Entomoparasitic, Periplaneta Americana, thelastoma Bulhoesi.

**INTRODUCTION**

Cockroaches are one of the most notorious, diverse group of insect constitutes 4500 species in habitats varied environmental conditions including tropical and temperate forests, grassland, and salt marshes (Bell et al.2007) Because they have survived since the Carboniferous period (ca.350 million years ago)without change in their form, they are considered one of the most successful animal group on the earth and are able to cope with harsh climate change an survival competition(Grimaldi and Engel 2005.)American cockroach *Periplaneta americana* (family-Blattidae) is one of the most important domestic pest can become public health problem due to their association with human waste and diseases, and their ability to move from sewers into homes and commercial establishments their presence in these habitats is of epidemiological significance(BELL,ALIYODI 1981). *Pamericana* carries many species of nematodes in its hindgut. Nematodes are small and round worms belonging to the family Thalastomatidae (order Oxyurida) are parasitic or commensal in saprophytic terrestrial arthropods (Shah 2007). it is a large family ,currently represented by about 31 genera. These nematodes live within the hindgut of the host and would feed on the bacterial microfauna found there (Adaman1994) Several parasitic nematode species sometimes co-infect individual cockroaches: for example nematodes isolates from American cockroach settling in several countries were, *Thelastoma bulhoesi*, *T.periplaneticola*, *Hammerschmidtella diesingi*, and *Leidyndema appendiculata* (Ozawa and Hasegawa unpublishes data: Chitwood 1932; Dobrovolny and Ackert 1934; Adamson and Noble 1993;Connor and Adamson 1998;Shah 2007; Blanco et al 2012).American cockroach is carrier of these nematodes. These nematodes have host parasite interaction so can be used as a biological control measure against host and also they may help to reduce the harmful effects of chemical pesticides usually used to control cockroaches.

**MATERIAL AND METHODS**

**SAMPLE COLLECTION :**

*Pamericana* were collected from different localities of Aurangabad city, Maharashtra India with the help of forceps, baited traps placed in toilets, drains, bathrooms Each cockroach caught was placed in plastic bag that had been a hole -punched to allow for air flow.The cockroaches were identified using morphology as well as standard taxonomic keys (Cockroaches were washed in 70% alcohol for few min. then placed in saline solution allowed to dry at room temperature.

**PARASITE COLLECTION :**

Cockroaches are dissected with the help of scissors, forceps and needles and alimentary canal was drawn out intact by

grasping the head and thorax and gently pulling apart the intestine was then slit longitudinally with fine needle and placed flat on a slide(Rehana R,Et al 2016) on black background . Live nematodes picked out and transferred to the distilled water and normal saline solution with the help of fine brush. After washing the nematodes in saline solution they were killed in hot 2% glycerine and 8% formalin mixture and stretched , killed nematodes then transferred to 5% glycerine and 95 % alcohol mixture, kept it overnight. Next day slides were prepared using glycerine. All diagrams were made with the help of camera Lucida and measurements were taken.

**RESULTS AND DISCUSSIONS:-**

Table no. 1. Morphometric characters of female *Thelastoma bulhoesi* in *Periplaneta americana* in Aurangabad city of Maharashtra India. All measurements are in mm unless otherwise mentioned.

characters	Morphometric measurements in mm
Length	3.50-5.661
Width	0.250-0.544
Oesophagus length	0.320-0.833
Nerve ring anterior end	0.125-0.374
Excretory pore anterior end	0.650-0.860
Vulva anterior end	1.735-2.550
Tail	0.896-1.462
Corpus	0.110-0.340x 0.030-0.051
Isthmus	0.159-0.289x0 0.030-0.051
End bulb	0.150-0.221x 0.085-0.170

**DISCRPTION:-**

70 Cockroaches dissected out of which 16 were infected by *T.bulhoesi* .28 parasites collected from host Females found frequently,no male found.Female- body length measures 5.661mm relatively robust, from first cephalic annule widens,Cuticle markedly annulated from end of the first cephalic annule to the level of the anus.Oral opening surrounded by 8 'C' shaped elavated labiopapillae.First cephalic annule cone like.Oesophagus 0.833 mm long consisting of corpus 340 mm long,an isthumus is short 29 mm long slender than procarpus. Basal bulb rounded 210 mm long by 170 widens.Nerve ring 0.374 mm from anterior end of the body.Excretory pore located at the midpoint of basal bulb,0.860 mm from anterior end of the body.Intestine inflated anteriorly to form distinc cardia .Vulva ventral me

dian tranverse slit near midbody .Vagina muscular anteriorly directed. Amphidelphic.Eggs are Spherical to slightly to ellipsoidal 90 um long 85um wide.Tail filiform,ending in fine tip.

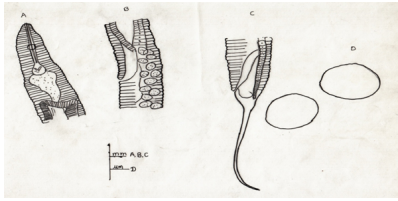


Fig.A- Anterior region fig.B – Middle region Fig.C –Posterior region Fig.D-Eggs of *Thelastoma bulhoesi* .

## DISCUSSION

Barus and Koubkova (2002) divided the genus *Thelastoma* in four species based on the relative tail length (ratio of tail length/body length)of the females..According to this *thelstoma bulhoesi* belongs to group B which includes 25-48 % of body length (upper limit always being higher than 30% ).*T.riveroi* is the more similar species to *T.bulhoesi* in both morphology and biometrics.the more evident feature for segregate females of *T.bulhoesi* from *T.riveroi* is the presence o smooth shelled egg in the former in opposition to egg with a characteristics thickened groove in the shell in *Triveroi*. (Chitwood 1932). Present females are longer than *T.dollfusi*, moreover excretory pore is located more anteriorly in *T.dollfusi* at junction of the basal bulb with the Isthumus (Osche 1960), instead of *T.bulhoesi*, with the excretory pore at midpoint of basal bulb.*T.gipititi* and *T.gueyei*(two similar species in morphology) have the vulva displaced to the posterior third of the body (V%=77.0-79. and 75.285.8, respectively vs.*T.bulhoesi*, that present the vulva at level of midbody (V%=40.7-64.7) (Van Waerebeke 1987:Koubkova et al 2006) *T.Macracamphidum* can be seperated from *T.bulhoesi* by having its tail comparatively longer , (2.1-3.2 vs 3.6-6.5) present females shows 3.8 ratio.The nerve ring is slightly displaced to the posterior half of the corpus in *T.macracamphidum* (Christic 1931) instead of *T.bulhoesi* nerve ring encircles the corpus at its midpoint.As the above characters are minor,so species is redescribed here as *Thelastoma bulhoesi*.

## SUMMARY:-

*Thelastoma bulhoesi* a entomoparasite found infecting Cockroach *Periplaneta americana*. present species compaired with previously found specie of entmoprasitess and shown minor differences with *Thelastoma bulhoesi* so the species is redescribed as *Thelastoma bulhoesi*.

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