



Taxonomical Study of Cestode Parasite *Dipylidium caninum* (Eucestoda: Dilepidiidae), In Common Cat, *Felis domesticus* From Ahmednagar, India

D.S.Tambe¹

¹Department of Zoology, Padmashri Vikhe Patil College of Arts, Science & Commerce, Pravaranagar, Maharashtra, India.

Department of Zoology, Savitribai Phule Pune University, India

Correspondence Author: Dr.Tambe Dinkar Sayaji

Abstract

The present communication deals with the taxonomical description of cestode parasite Dipylidium caninum commonly known as flea tapeworm. The neck is almost as broad as the scolex and segmentation begins immediately behind the scolex. The scolex is slightly dome shaped muscular, narrow anteriorly & broad posteriorly & measures (0.33 – 0.354) in length and (0.208 -0.353) in breadth. Rostellum is retractable with two rows of tiny, backward facing, rose-thorn-like hooks. Suckers are medium arranged in four corners. Circular to oval in shaped. Mature segment are slightly longer than broader with regular lateral margins and the no projections at the anterior & posterior corners measures (0.3834 – 0.4417) in length and (0.3737 – 0.4126) in breadth. The testes are small rounded numerous in number, pre ovarian & post ovarian and measures (0.0145 – 0.0194) in diameter. The cirrus pouch is medium cylindrical on anterior side of the lateral margin of the segment. The cirrus is thin and slightly coil in the cirrus pouch & measures (0.0431 – 0.0533) in length & (0.0097 – 0.0098) in breadth. Vasdeference is medium without loop. Ovaries 33e3without lobed on both side. The vagina is small and ventral to cirrus pouch. Genital pore are medium in size oval in shape. The vitelline glands are smaller triangular in shape post ovarian near the posterior margin of the segments. Gravid proglottids are creamy white, resemble cucumber seed like.

Key words – Taxonomy, Cestode, Dipylidium caninum, Felis domesticus.

I. INTRODUCTION

Dipylidium caninum [8], [7] a common intestinal tapeworm of dog and cats [10] also called the flea tape worm, double pore tape worm or cucumber tape worm. *D. Caninum* is taxonomically located in the Dipylidium genus, Dilepidiidae family, order Cyclophyllidea, and subclass Eucestoda [4]. It occasionally also infects humans predominantly children. The intermediate hosts are larval fleas (*Pulex irritans*, *Ctenocephalides canis*) or a dog's louse (*Trichodectes canis*) [13].

Body composed of 60 to 175 elliptical segments or Proglottids [2]. The terminal tapeworm proglottids (Segments) are passed singly in the feces [6]. Since the tapeworm proglottids possess both circular and longitudinal smooth musculature [5], they have the ability to move about the cat's perianal region, on the feces, on the bedding or across any surface where they may be deposited [6]. These proglottids will desiccate in the external environment. As they lose moisture, they shrivel up, often resembling uncooked rice grains [2].

Intestinal parasites absorb food through their body surface because they lack a digestive system of their own. They absorb the nutrients [14].

The infection occurs worldwide and human infections have been reported in Europe, the Philippines, China, Japan, Argentina and Southeastern Poland [1],[12]. Most infections occurred among

children's and one third of these cases among infants up to 6 months or younger, especially those in close association with infected dogs and cats [9]. In children it can be associated with abdominal pain, indigestion, diarrhea, loss of appetite, irritability, urticarial, and eosinophilia [3].

II. MATERIALS AND METHODS

For the taxonomical study of cestode parasites ten specimens were collected from the intestines of accidentally dead cats *Felis domesticus* from Ahmednagar District, Maharashtra.

These cestodes were flattened, preserved in 4% formalin, stained with Harris haematoxylin, passed through various alcoholic grades, cleared in xylol, mounted in D.P.X and whole mount slides prepared for further anatomical studies. Drawings were made with the aid of Camera Lucida. All measurements are given in millimeters. Unless otherwise indicated.

III. DESCRIPTION

The cestode parasites were collected from the intestine of a cat *Felis domesticus* at Loni, Tal. Rahata, Dist. Ahmednagar M.S. India; in the month of October and November 2016.

These cestodes were flattened, preserved in 4% formalin, were stained with Harris haematoxylin passed through various alcoholic grades, cleared in xylol, mounted in D.P.X. and whole mount slides were prepared for further anatomical studies.

The adult worm is about 18 inches (46 cm) long. Body composed of 60 to 150 elliptical segments. The scolex is large in size slightly dome shaped muscular, narrow anteriority & broad posteriorly & measures (0.33 – 0.354) in length and (0.208 -0.353) in breadth. Rostellum is retractable with two rows of hooks. Tiny, backward facing, rose-thorn-like hooks,[15] measure (0.077 – 0.140) in length and (0.053 – 0.077) in breadth.

The suckers are medium arranged in four corners. Circular to oval in shaped & measures (0.0436 – 0.0679) in diameter.

Mature segment are slightly longer than broader with regular lateral margins and the no projections at the anterior & posterior corners measures (0.3834 – 0.4417) in length and (0.3737 – 0.4126) in breadth.

The testes are small rounded numerous in number, pre ovarian & post ovarian and measures (0.0145 – 0.0194) in diameter.

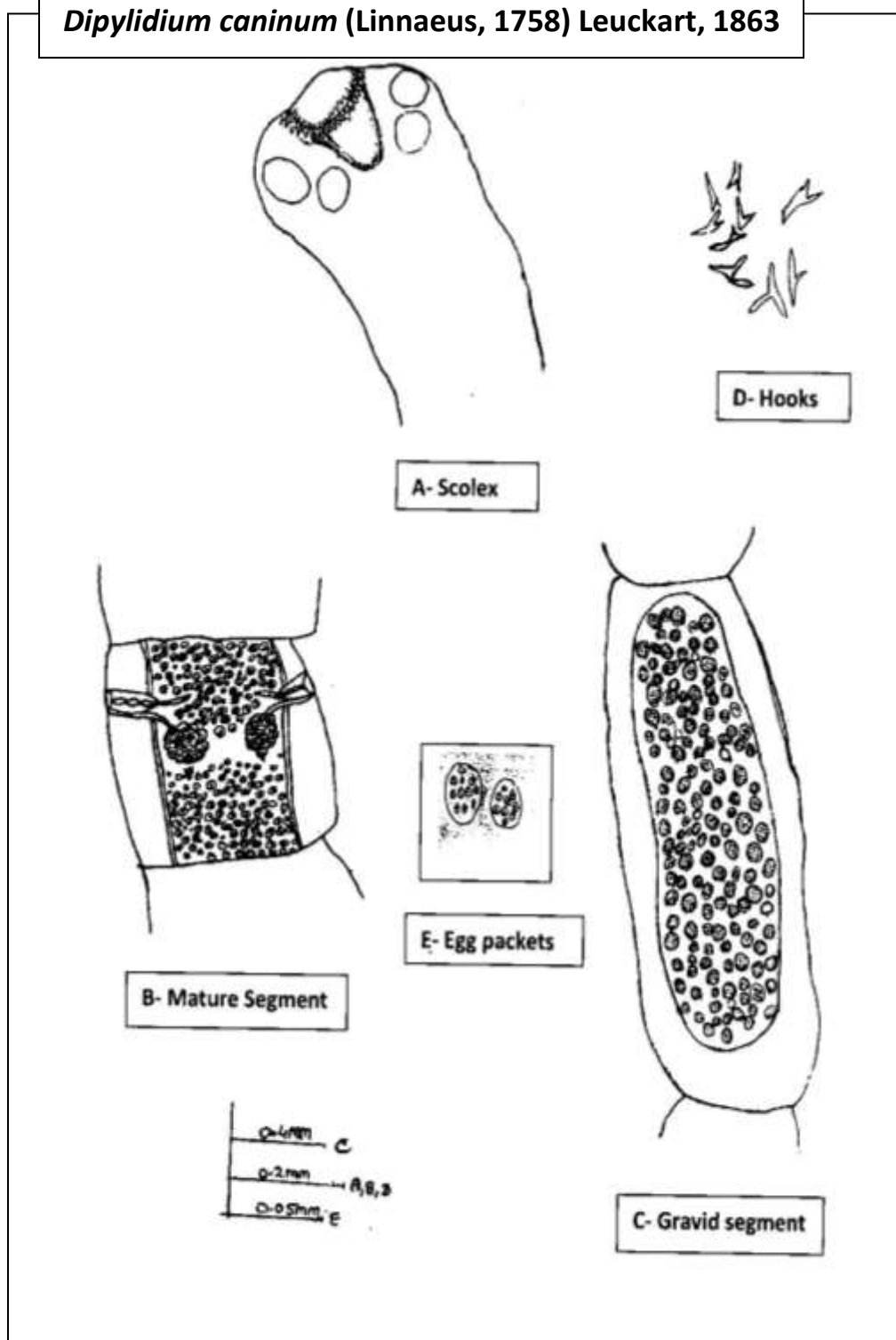
The cirrus pouch is medium cylindrical on anterior side of the lateral margin of the segment. And measures (0.0728 – 0.0824) in length and (0.0145 – 0.0436) in breadth.

The cirrus is thin and slightly coil in the cirrus pouch & measures (0.0631 – 0.0533) in length & (0.0097 – 0.0098) in breadth. Vasdeference is medium without loop and measures (0.0436 – 0.0631) in length and (0.0043 – 0.0097) in breadth.

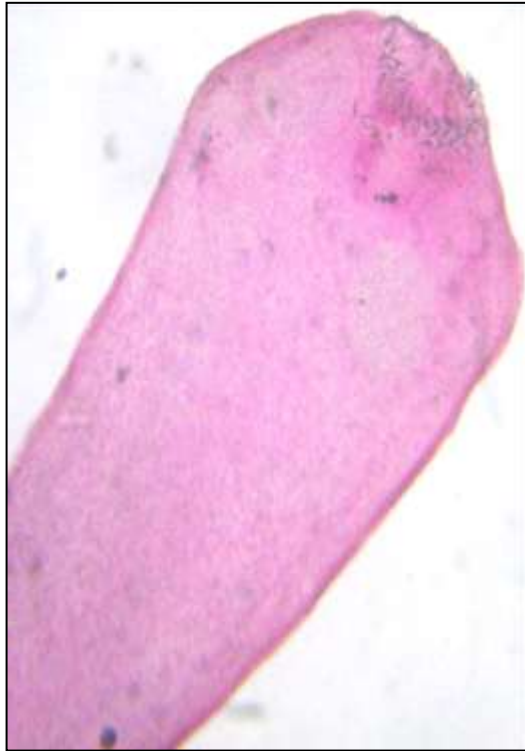
Ovaries are without lobes. In the middle of segment unequal in size left ovary is slightly larger than right sides. Measures (0.1941 – 0.2132) in length and (0.0631 – 0.0679) in breadth. The vagina is small and ventral to cirrus pouch. Start from the genital pore turns posteriorly and measures (0.0048) in diameter.

Genital pore are medium in size oval in shape placed anteriorly to the segment on both sides and measures (0.00339 – 0.0436) in length and (0.0097 – 0.0145) in breadth.

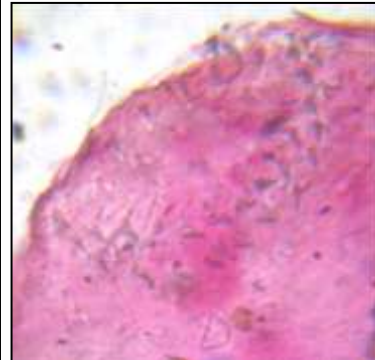
Dipylidium caninum (Linnaeus, 1758) Leuckart, 1863



Dipylidium caninum (Linnaeus, 1758) Leuckart, 1863



A - Scolex



D - Hooks



B- Mature Segment



C- Gravid

The longitudinal excretory canal are medium in size & measures (0.3980 – 0.4077) in length and (0.0048 – 0.0097) in breadth.

The vitelline glands are smaller triangular in shape post ovarian near the posterior margin of the segment and measures (0.0631 – 0.0679) in length and (0.0145 – 0.0194) in breadth.

Gravid proglottids are creamy white, (0.9801 to 0.9908) in length and resemble cucumber seed hence. Hence, *Dipylidium caninum* is in also referred to as the “cucumber seed” tapeworm [6].

The gravid segment contains uterus with eggs capsules or egg packets each packet contains from 9 to 11 hexacanth ova.

IV. RESULT AND DISCUSSION

The genus *dipylidium* was erected by Linnaeus 1758 as a type species *Dipylidium Caninum*. After going through the literature the cestode under discussion turned out to *Dipylidium Caninum*.

The worm under discussion resembles *D. caninum* in having the Scolex slightly dome shaped, rostellum is retractable with two rows of hooks retractable. Mature segment are longer than broader, neck absent ovary without lobe on both side two rows of tiny hooks, backward facing, rose-thorn-like. Uterus with 9 to 11 eggs packets. The shapes of proglottids (segments) are cucumber seed like.

1) The present cestode differs from *Dipylidium Caninum* in the number of hooks rows 2 rows Vs 1 to 8 rows [12].

2) The present cestode differs from *Dipylidium Caninum* in the number segments 60 to 150 elliptical segments. Vs 60 to 175 elliptical segments [2].

As the above characters are minor, it is redescribed here as *Dipylidium caninum* from *Felis domesticus* collected from Ahmednagar District, (M.S.) India.

TAXONOMIC SUMMARY

Genus	<i>Dipylidium</i> [8].
Species	<i>Dipylidium Caninum</i> [8], [7].
Type of host	<i>Felis domesticus</i> [8]
Habitat	Intestine
Type of locality	Ahmednagar District, Maharashtra,
Para type	Dept. of Zoology, Padmashri Vikhe Patil College Pravaranagar
Date of Collection	October and November 2016.
Etymology	As the cestode species reported from Ahmednagar District (M.S.) India.

V. CONCLUSION

The present taxonomical study reveal that the peat animal cat *Felis domesticus* is infected by cestode *Dipylidium Caninum*. These cestode parasites infect and damages intestinal wall of host. They are located in host intestine and absorb important nutrients. This parasite causes Dipylidiasis in human being.

VI. ACKNOWLEDGEMENT

The author is very much thankful to the Head of Department of Zoology and Principal of Padmashri Vikhe College Pravaranagar for his cooperation and encouragement.

BIBLIOGRAPHY

- [1] Bogusława Sz waja, Leszek Romanski, Michal zabczyk 2011. *Wiadomooeci Parazytologiczne*, 57 (30), 175-178.
- [2] Boreham RE, Boreham PFL. 1990. *Dipylidium caninum*: Life cycle, epizootiology, and control. *Comp Cont Ed Prac Vet* 12(5):667-676.
- [3] Buczek A. 2005. Choroby pasożytnicze. *Epidemiologia, diagnostyka, objawy*. Koliber, Lublin. *Dipylidium caninum* infection in child 177.
- [4] Cabello RR, Ruiz AC, Feregrino RR, Romero LC, Feregrino RR, Zavala JT. *Dipylidium caninum* infection. *BMJ Case Rep*. 2011 doi: 10.1136/bcr.07.2011.4510.
- [5] Chitwood M, Lichtenfels JR. 1973. Identification of parasitic metazoa in tissue sections. *Exp Parasitol* 32:407-519.
- [6] Griffiths HJ. 1978. In: *a Handbook of Veterinary Parasitology Domestic Animals of North America*. University of Minnesota. Minneapolis. P.119.
- [7] Leuckart R. 1863. *Die Parasiten des Menschen und die von ihnen herrührenden Krankheiten*. Leipzig, 1879-1886.
- [8] Linnaeus, C. (1758). *Systema naturae per regna tria naturae, secundum classea, ordines, benere, species, cum characteribus, differentiis, synonymis, locis, editiodecinia, reformata* Vol 1.823 pp. Horniae.
- [9] Molina C.P., Ogburn J., Adegboyega P. 2003. Infection by *Dipylidium caninum* in an infant. *Archives of Pathology and Laboratory Medicine* 127: 157-159.
- [10] Narasimham MV, Panda P, Mohanty I, Sahu S, Padhi S, Dash M. *Dipylidium caninum* infection in a child: a rare case report. *Indian J Med Microbiol*. 2013; 31: 82–84.
- [11] Neafie R.C., Marty A.M. 1993. Unusual infections in humans. *Clinical Microbiology Reviews* 6: 34-56.
- [12] Peng Jiang 2017, *Porean Parasitol*, 55 (1): 61-64.
- [13] R. Kadłubowski, A. Kurnatowska. 1999. *Zaryspara - zytologiilekarskiej*. Wydawnic two Lekarskie PZWL, Warszawa.
- [14] Tambe D.S. (2017). Taxonomical study of cestode parasite *Taenia taeniaeformis* in common cat, *Felis domesticus* from Ahmednagar, India, *IJAPSA* Vol 03, Issue 7.
- [15] Witenberg G. 1932. on the cestode subfamily Dipylidiinae Stiles. *Z Parasitenk* 4:541-584.
- [16] Yamaguti, S. (1959). *Systema Helminthum*, Vol II, the cestode of vertebrates. Inter Science publisher, INC/LTD, New York and London. P.860.