

TAXONOMIC OBSERVATION OF THE GENUS *STILESIA* RAILLIET, 1893 FROM *OVIS BHARAL* WITH DESCRIPTION OF A NEW SPECIES

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ABSTRACT : The present communication deals with new species of the genus *Stilesia* Railliet in 1893 i.e. *Stilesia paruterina* Sp. Nov. collected from *Ovis bharal* at Renapur Dist. Latur (M.S.). The present form comes closer to all the known valid species of this genus in general topography of organs but differs due to some characters i.e. scolex globular, suckers four, large, muscular, arranged at two groups, neck long, mature proglottids 6-7 times broader than long, testes small, arranged in two groups, 5 in each groups, genital pore sub-marginal, regularly alternate, vagina posterior to cirrus pouch, ovary compact, bean shaped and par uterine organ large.

Key words : *Ovis bharal*, *Stilesia*, Taxonomic observation.

INTRODUCTION

The genus *Stilesia* was erected by Railliet in 1893 from *Ovis aries* in Europe, Asia and Africa as *Stilesia globipunctata*, later on in 1896 Railliet described *Stilesia vittata* from *Camelus bacterium*'s from East Africa. Later on Wolfhugel in 1903 added *Stilesia hepatica* from sheep and goat of East Africa. In India *Stilesia okapi* was described by Leiper in 1936 from *Okapi* in Africa, is regarded by Baer (1926) as a variety of *Stilesia globipunctata*. Kadam *et al.* (1980) added *Stilesia leiperi* from *Ovis bharal* later on *Stilesia caballeri* was erected by Kalyankar (1981) from *Capra hircus*. Shinde *et al.* (1985) described *Stilesia southwelli*, Later on Jadhav (1982) described *Stilesia aurangabadensis* from *Ovis bharal*. Malhotra and Capoor (1983) added two new species i.e. *Stilesia gharwalensis* and *Stilesia Kothwarensis* from *Capra hircus*, *Ovis bharal* respectively. In 1985 Shinde *et al.* added *Stilesia marathwadensis* from *Capra hircus* later on Jadhav, 1999 described *Stilesia jadhavae* from *Ovis bharal*, *Stilesia yawalensis*, was added by Kalse *et al.* (1999) from *Capra hircus*. Deshmukh and Shinde (2001) added *Stilesia dhondage* from *Capra hircus* Patil *et al.* (1994) added *Stilesia capari* from *Capra hircus*, later on Pawar *et al.* (2004) added *Stilesia ambajogaensis* from *Bos indicus*. Later on *Stilesia pandeyi* was described by Nanware *et al.* (2004) from *Capra hircus*. Khadap (2004) reported *Stilesia indapurensis* from *Capra hircus*, Shelke and Shinde (2004) described *Stilesia daulatabadensis* from *Capra hircus* later on Nanware and Jadhav (2005) described *Stilesia jadhavae* from *Capra hircus* Padwal and Jadhav in 2006 added *Stilesia govindae* from *Ovis bharal*.

MATERIAL AND METHODS

Twenty four cestode parasites were collected from the intestine of *Ovis bharal* at Renapur Dist. Latur (M.S.) during the period of July, 2007 to June, 2010. These cestodes are preserved in hot 4% formalin and seven specimens are stained with Harris haematoxylin and Borax carmine, passed through various alcoholic grades, cleared in xylene, mounted in D.P.X. and drawings are made with the aid of camera lucida. All measurements are given in millimeters.

RESULTS AND DISCUSSION

All the cestodes are long consisting scolex, immature, mature and gravid proglottids. The scolex is large, globular, well marked off from strobila and measures 1.409 (1.388-1.431) in length and 1.685 (1.484-1.897) in width. Suckers are large, oval to rounded, muscular, arranged in two groups, overlap to each other and measures 0.5035 (0.424-0.583) in length and 0.614 (0.530-0.699) in width. The neck is long, longer than broad and measures 1.192 (1.166-1.219) in length and 1.022 (0.901-1.144) in width. The mature proglottids are 6-7 times broader than long and measures 0.265 (0.212-0.318) in length and 2.915 (2.812-2.915) in width. The testes are oval to rounded in shape, in two groups, 5 in each group and measures 0.0742 (0.0636-0.0848) in length and 0.0636 (0.0424-0.0848) in width. The cirrus pouch is small, oval, elongated, sub-marginal, pre-ovarian and measures 0.196 (0.180-0.212) in length and 0.0795 (0.0636-0.0954) in width. Cirrus is thin, slightly curved, within the cirrus pouch and measures 0.180 (0.169-0.190) in length and 0.021 (0.010-0.031) in width. The vas deferens is short, thin, straight tube and measures 0.116 (0.106-0.127) in length and 0.021 (0.010-0.031) in width.

Vagina and cirrus pouch open into a common pore known as genital pore, which is small in size, oval in shape, sub-marginal, regularly alternate and measures 0.058 (0.053-0.063) in length and 0.037 (0.031-0.042) in width. The vagina is thin

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tube, slightly curved, arise from posterior to cirrus pouch, forms receptaculum seminis and measures 0.360 (0.349-0.371) in length and 0.021 (0.010-0.031) in width. Receptaculum seminis is swallowed tube, open into ootype and measures 0.148 (0.137-0.159) in length and 0.031 (0.021-0.042) in width. Ootype is oval, large in size, compact and measures 0.132 (0.106-0.159) in length and 0.143 (0.127-0.159) in width. Ovary is compact, bean shaped and measures 0.360 (0.318-0.402) in length and 0.201 (0.190-0.212) in width. The excretory canals are situated on either side of proglottid and measures 0.265 (0.212-0.318) in length and 0.026 (0.021-0.031) in width. The paruterine organ is very big.

The genus *Stilesia* was erected by Railliet (1893) for *Stilesia globipunctata*, Rivolta (1874). The present worm comes closer to all the known species of the genus *Stilesia* Railliet, 1893 in general topography of organs. But differs due to some characters from following species.

1. The present parasite differs from *S.globipunctata* (Rivolta, 1874) Railliet (1893) in having scolex small in size, rounded, testes 4-7, cirrus pouch small, pyriform, ventral to vagina, ovary spherical, vagina dorsal to cirrus pouch and reported from *Ovis aries* in Europe.
 2. The worm under discussion differs from *Stilesia vittata* Railliet (1896) in having testes 5-9 each in two lateral groups, vas deferens closely coiled, cirrus pouch elongated, cylindrical, ovary rounded compact, genital pore in anterior half of the segment and reported from *Camelus bactranus* in Africa.
 3. The present tapeworm differs from *Stilesia hepatica* Wolffhugel (1903) in having testes 6-7, in each side, pre ovarian, vas deferens not closely coiled, but extending up to excretory canal, ovary small, compact, oval, vagina anterior to cirrus pouch, genital pore in the middle of the segment and reported from the liver of *Ovis aries*.
 4. The worm under discussion differs from *Stilesia okapi* Leiper (1936) in having testes 2-3 testes in each lateral side and from *Okapi* in Africa.
 5. The present parasite differs from *Stilesia leiperi*, Kadam *et al.* (1980); which is having testes 5-6, on each side, cirrus pouch cylindrical, vas deferens not closely coiled but extend beyond long excretory canals, ovary medium, almost circular, compact with small acini and genital pore in anterior half of the segment and reported from *Ovis bharal*.
 6. The present worm differs from *Stilesia caballeroi*, Kalyankar (1981) in having the scolex very small, testes 1 to 11 in number testes on each side, disposed in 2 to 3 rows.
 7. The present form differs from *Stilesia southwelli* Shinde *et al.* (1985); which is having quadrangular scolex, mature proglottids 5 times broader than long, testes 4 in each two lateral groups, vas deferens very much coiled, reaching upto ovary, ovary small, round without acini, genital pore at 1/3rd from anterior margin of the proglottid, par uterine organs two in each proglottid, transversely elongated, containing (10-15) group of eggs.
 8. The present worm differs from *Stilesia aurangabadensis*, Jadhav *et al.* (1982) in having the scolex spherical, testes rounded, in two lateral groups, 5 on each lateral side of the proglottid and lateral to ovary, vas deferens not coiled, reaches up to longitudinal excretory canal, cirrus pouch cylindrical, ovary medium in size, compact, circular in poral half and reported from *Ovis bharal* in India.
 9. The present tapeworm differs from *Stilesia garhwalensis* Malhotra and Capoor (1983); in having the size of scolex 0.510-0.840 in diameter, testes 0-9 in numbers, size of cirrus pouch 0.011-0.101 in diameter, size of ovary 0.009-0.097 in diameter, genital pore situated at anterior 1/3rd level of lateral margin of proglottid.
 10. The present cestode differs from *Stilesia kotwarensis*, Malhotra and Capoor (1983); in having testes 1 to 12 in numbers, ovary small, spherical, situated inner to the longitudinal excretory canal on poral side, genital pore at anterior 1/3rd level of lateral margin of proglottid and reported from *Ovis bharal* in India.
 11. The present form differs from *Stilesia marathwadensis* Shinde *et al.* (1985); is having proglottids broader than long, testes 5-7 in number, rounded, in two groups and cirrus pouch cylindrical.
 12. The present worm differs from *Stilesia jadhavae* Jadhav (1999) in having the mature proglottids 8 times broader than long, testes 5-7 in numbers, ootype 0.045 in diameter, ovary 0.197 in diameter, vagina anterior to cirrus pouch and reported from *Ovis bharal* in India.
 13. The present cestode differs from *Stilesia yawalensis* Shinde and Kalse (1999) in having scolex quadrangular, mature proglottids broader than long, testes rounded, in 2 groups (5-6 in number), vas-deference thin, curved, cirrus pouch oval, ovary medium, globular, a single mass, vagina thin and genital pore marginal.
 14. The present parasite differs from *Stilesia dhondgae*, Deshmukh *et al.* (2001) in having scolex quadrangular, broad anteriorly, testes oval, 8-10 in numbers, arranged in 2 rows, vas deferens short, cirrus pouch small, oval, situated middle to posterior side, ovary bilobed and par uterine organ simple.
 15. The present worm differs from *S.capari* Patil *et al.* (2002) in having scolex globular, testes 8-9 in numbers, vas deferens short, cirrus pouch small, ovary sac like and vagina anterior to cirrus pouch.
 16. The present cestode differs from *S.ambajogaensis* Pawar *et al.* (2004) in having scolex quadrangular, testes 25-30 in
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numbers, cirrus pouch cylindrical, elongated, ovary small, oval, vagina anterior to cirrus pouch and reported from *Bos indicus*, in India.

17. The present tapeworm differs from *Stilesia pandeyi*, Nanaware *et al.* (2004) in having scolex large, with four suckers, neck short and wide almost four times broader than long, mature proglottids almost 17 times broader than long, with convex lateral margins and slight projections at posterior corners of proglottid, testes are on two lateral fields, 20 in number, cirrus pouch small, elongated, at one third of anterior margins of proglottid, obliquely placed, cirrus thin, slightly curved, vas deferens short, medium, obliquely placed, ovary small, oval, with 3-4 short, blunt acini, vagina thin tube, runs obliquely, ootype small and rounded, genital pores medium, oval.
18. The present cestode differs from *Stilesia indapurensis*, Khadap (2004) in having scolex medium, quadrangular, broad anteriorly, mature proglottids squarish, testes oval, 8 to 9 in numbers, vas deferens curved, cirrus pouch large elongated, vagina thin, par uterine organs two in each mature segment.
19. The present parasite differs from *Stilesia daulatabadensis*, Shelke and Shinde (2004) in having scolex globular, medium, squarish, testes acraspedate, eleven in number, 7 on poral and 4 on aporal side, vas deferens medium, slightly curved, cirrus pouch medium, oval, ovary medium, oval, single mass, vagina thin, long, anterior to cirrus pouch, slightly curved and par uterine organ 2 in number.
20. The present worm differs from *S.jadhavi* Nanaware and Jadhav (2005) in having scolex globular, testes 14 in numbers, ovary lobulated and vagina anterior to cirrus pouch.
21. The present cestode differs from *S.govindae* Padwa and Jadhav (2006) in having scolex medium, elongated, mature proglottids 15 times broader than long, testes 12-14 in numbers, cirrus pouch cylindrical, sac like, vas deferens long, ovary lobulated and vagina postero-ventral to cirrus pouch.

The above noted characters are valid enough to erect a new species. Hence the species is named as *S.paruterina* Sp.Nov. The present species is named on account of having well marked Par uterine organ as its salient feature.

Taxonomic summary :

Genus	: <i>Stilesia</i> Rail (1893)
Species	: <i>Stilesia paruterina</i> Sp.Nov.
Type host	: <i>Ovis bharal</i>
Habitat (Site)	: Intestine
Type locality	: India, Maharashtra, Latur (Renapur)
Prevalence	: 24 specimens are collected from 14 host out of 18 examined.
Period of collection	: July,2007 to June,2010.
Number of specimen	: 24
Accession number	: PGDZ/YMN/1-5/July, 2007 June,2010.
Deposition	: P.G. Department of Zoology, Yeshwant Mahavidyalaya, Nanded (M.S.)
Etymology	: The presliet, ent species is named as <i>S.paruterina</i> Sp.Nov. due to well marked Par uterine organ.

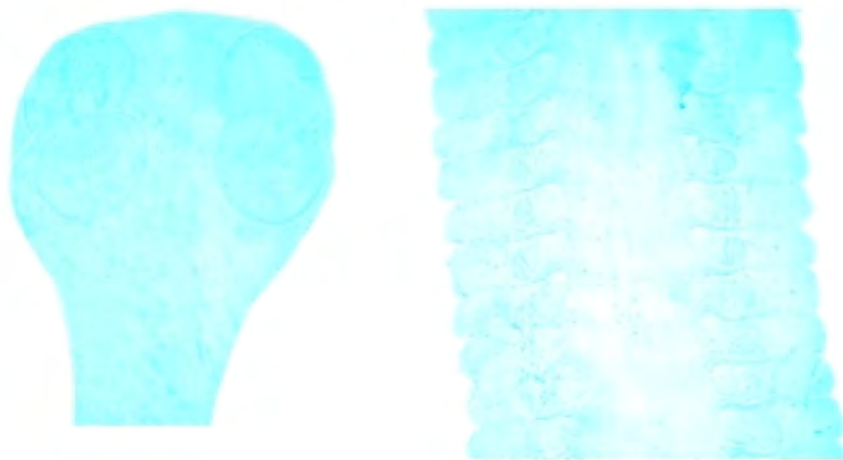


Fig. 1 Microphotoplate of *Stilesia paruterina* Sp.Nov.

A key to the species of the genus *Stilesia* Railliet (1893)

- | | |
|---|--|
| Vagina anterior to cirrus pouch | - 1 |
| Vagina posterior to cirrus pouch | - 2 |
| Vagina postero-ventral to cirrus pouch | - <i>S.govindae</i> Padwal and Jadhav (2006) |
| 1. Scolex rounded | - 3 |
| Scolex globular | - 4 |
| Scolex quadrangular | - 5 |
| 2. Mature proglottids longer than broad | - 6 |
| Mature proglottids broader than long | - 7 |
| Mature proglottids squarish in shape | - 8 |
| 3. Cirrus pouch pyriform | - <i>S.globipunctata</i> Railliet (1893) |
| Cirrus pouch oval | - <i>S.hepatica</i> Wolffhugel (1903) |
| 4. Ovary lobulated | - <i>S.jadhavi</i> Nanware <i>et al.</i> (2005) |
| Ovary sac like | - <i>S.capari</i> Patil <i>et al.</i> (2002) |
| Ovary rounded | - <i>S.jadhavae</i> Jadhav (1999) |
| 5. Testes 5-6 in number | - <i>S.yawalensis</i> Kalse <i>et al.</i> (1999) |
| Testes 8-10 in number | - <i>S.dhondagae</i> Deshmukh and Shinde (2001) |
| Testes 25-30 in number | - <i>S.ambajogaensis</i> Pawar <i>et al.</i> (2005) |
| 6. Cirrus pouch elongated | - <i>S.okapi</i> Leiper (1936) |
| Cirrus pouch cylindrical | - <i>S.lepri</i> Kadam <i>et al.</i> (1950) |
| Cirrus pouch oval in Shape | - <i>S.caballeroi</i> Kalyankar <i>et al.</i> (1981) |
| 7. Scolex quadrangular | - <i>S.southwelli</i> Shinde <i>et al.</i> (1982) |
| Scolex spherical in Shape | - <i>S.aurangabadensis</i> Jadhav <i>et al.</i> (1902) |
| Scolex globular | - 9 |
| Scolex circular | - 10 |
| Scolex rounded | - <i>S.vittata</i> Railliet (1886) |
| 8. Cirrus pouch oval in shape | - <i>S.daulatabadensis</i> Shelke <i>et al.</i> (2004) |
| Cirrus pouch elongated | - <i>S.indapurensis</i> Khadap <i>et al.</i> (2004) |
| 9. Ovary spherical | - <i>S.garhwalensis</i> Malhotra and Capoor (1983) |
| Ovary oval in shape | - <i>S.pandeyi</i> Nanware and Jadhav (2004) |
| Ovary bean shaped | - <i>S.paruterina</i> Sp.Nov. |
| 10. Vas deferens straight tube | - <i>S.marathwadensis</i> Shinde <i>et al.</i> (1985) |
| Vas deferens coiled tube | - <i>S.kotwarensis</i> Malhotra and Capoor (1983) |

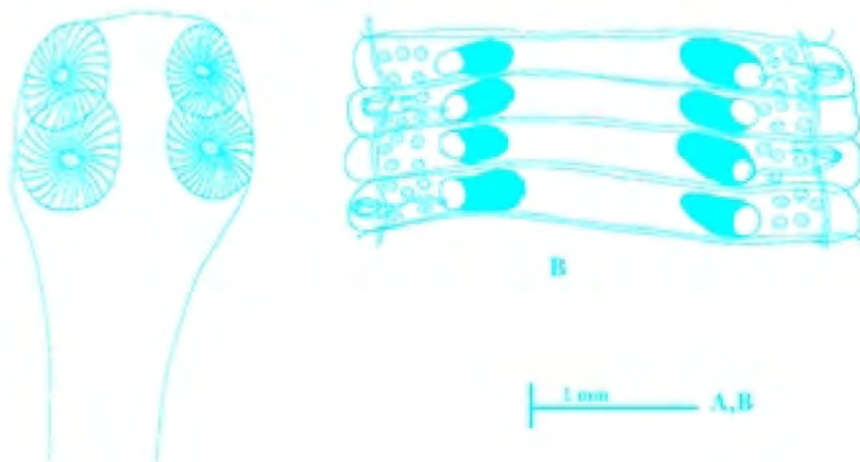


Fig. 2 Camera Lucida Diagram of *Stilesia paruterina* Sp.Nov.

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