

Redescription of *Raillietina (Raillietina) kordofanensis* Meggitt and Subramanian, 1927 with a taxonomic approach

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Abstract. Redescription of *Raillietina (Raillietina) kordofanensis*, Meggitt and Subramanian (1927) from a new host, viz., *Columba livia domestica* is made. The specimens closely resemble the species described by Meggitt and Subramanian (1927) except in having a longer cirrus pouch and smaller rostellar hooks. The teratological aberrations, viz., the presence of two cirrus pouches in the same proglottid with internal seminal vesicle are also reported. Taxonomy in biostatistical terms reveal the closeness of two species.

Keywords. Teratological aberrations ; taxonomy ; *Raillietina kordofanensis*.

1. Introduction

Raillietina (Raillietina) kordofanensis described from *Arvicanthis testicularis* by Meggitt and Subramanian 1927, is redescribed in the present paper from *Columba livia domestica* with minor differences in size, shape and other body organs. Besides it includes a detailed account of the scolex, suckers, female genitalia, etc. omitted by Meggitt and Subramanian. The similarity between two forms have been established by applying taxonomic formulae.

2. Materials and methods

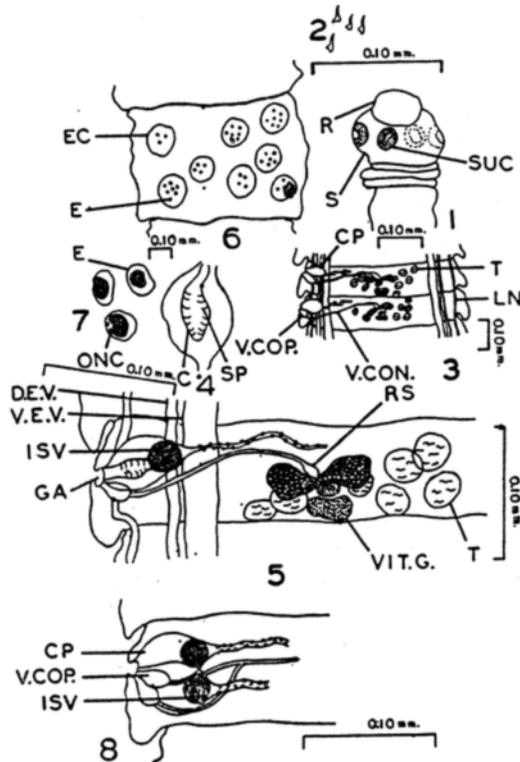
Specimens collected from small intestine of *Columba livia domestica* from Srinagar, District Pauri-Garhwal, were killed and stretched in lukewarm water ; fixed in Bouin's solution ; stained in haemalum and mounted in canada balsam. Camera lucida sketches were prepared and all measurements recorded in mm.

Significant taxonomic analysis of specimens, by various formulae, introduced by Malhotra (1979) and later illustrated by Malhotra *et al* (1980), precisely point out the variability in specimens of both authors. The coefficient of dissimilarity, similarity and mean character difference assume the values from zero (similarity) to unity (dissimilarity) while no definite range could be predicted for coefficient of divergence.

3. *Raillietina (Raillietina) kordofanensis* Meggitt and Subramanian, 1927
(figures 1-8)

3.1. *Diagnostic features*

Worms, small to medium-sized, measure 29-174 (102) in length and 2.0378 in maximum width met within gravid proglottides. All proglottides, broader than long. Scolex (figure 1) small, 0.0420-0.1715 × 0.021-0.0840 (0.1058 × 0.0525). Suckers oval to spherical, 0.0280-0.0595 × 0.0175-0.0455 (0.0438 × 0.0315). Suckers spinose with 4-6 (5) rows of minute spines, 0.0035-0.0105 (0.007) long. Rostellum small, oval 0.0210-0.084 × 0.0263-0.1260 (0.0525 × 0.0762). Rostellum armed with two rows of davaineid rostellar hooks (figure 2). Rostellar hooks 120-158 (139) in number and 0.0078-0.0237 (0.0118) long.



Figures 1-8. *Raillietina (Raillietina) kordofanensis* Meggitt et Subramanian, 1927. 1. Scolex 200 ×, 2. Rostellar hooks 300 ×, 3. Mature proglottides 100 ×, 4. Cirrus pouch 300 ×, 5. A portion of mature proglottid 300 ×, 6. Gravid proglottid 50 ×, 7. Egg with onchosphere 300 ×, 8. Mature proglottid's portion showing teratological aberration 300 ×. C—cirrus, C.D.—coefficient of divergence, C.SIM.—coefficient of similarity, C.DIS.—coefficient of dissimilarity, CP—cirrus pouch, D.E.V.—dorsal excretory vessel, E—egg, EC—egg capsule, GA—genital atrium, ISV—internal seminal vesicle, LN—lateral nerve, M.C.D.—mean character difference, ONC—onchosphere, R—rostellum, RS—receptaculum seminis, RH—rostellar hook, S—scolex, SP—spine, SUC—sucker, ST—strobila, T—testis, V.CON.—conducting part of vagina, V.COP.—copulatory part of vagina, V.E.V.—ventral excretory vessel, and VIT.G.—vitelline gland.

All units of measurements are in mm

Proglottides craspedote. Immature proglottides, 0.0072-0.0715 × 0.0429-0.4719 (0.0394 × 0.2574). Mature proglottides (figures 3, 5) 0.0429-0.2145 × 0.1287-1.0725 (0.1287 × 0.6006 and gravid proglottides (figure 6), 0.0858-1.3013 × 0.1430-2.0878 (0.6936 × 1.1154). Testes 4-14 (9) in number, measure 0.0072-0.0715 × 0.0072-0.0572 (0.03940 × 0.0322). Testes spherical to oblong, distributed lateroposterior to female genitalia and may overlap the ventral longitudinal vessels. Vas deferens a coiled narrow tube, 0.0035-0.0140 (0.0088) in diameter. Vas deferens surrounded by unicellular glands. Cirrus pouch (figure 4) pyriform, 0.007-0.5005 × 0.0018-0.77 (0.2538 × 0.0394). It may reach or overlap ventral longitudinal excretory vessel. Internal seminal vesicle, 0.0072-0.0251 × 0.0085-0.0307 (0.0194 × 0.0293). Ovary follicular, 0.0143-0.1144 × 0.0143-0.3718 (0.0982 × 0.2014) situated medially. Vagina consists of a copulatory and a conducting part. Copulatory part of vagina opens behind the cirrus pouch into genital atrium. Vitelline glands compact, 0.0192-0.1344 × 0.0192-0.2304 (0.0544 × 0.0840), postovarian. Reseptaculum seminis small, 0.0095-0.0192 × 0.0083-0.0096 (0.0158 × 0.0091). Uterus breaks down into 22-158 (78) egg capsules in each gravid proglottid. Egg capsules round to oval, 0.0143-0.2002 × 0.0143-0.143 (0.1856 × 0.0932), extend even beyond the ventral longitudinal excretory vessel. Each egg capsule contains 1-7 (5) eggs. Eggs oval, 0.0035-0.0865 × 0.0035-0.0455 (0.0539 × 0.0249). Onchosphere (figure 7), 0.0035-0.0385 × 0.0035-0.0315 (0.0219 × 0.0204).

Teratological aberrations observed in three proglottides of an individual and in one proglottid of another individual. Each of these proglottides showed double cirrus pouches with internal seminal vesicles. In both individuals the two cirrus pouches opened into a single genital atrium along with the copulatory portion of vagina (figure 8).

4. Discussion

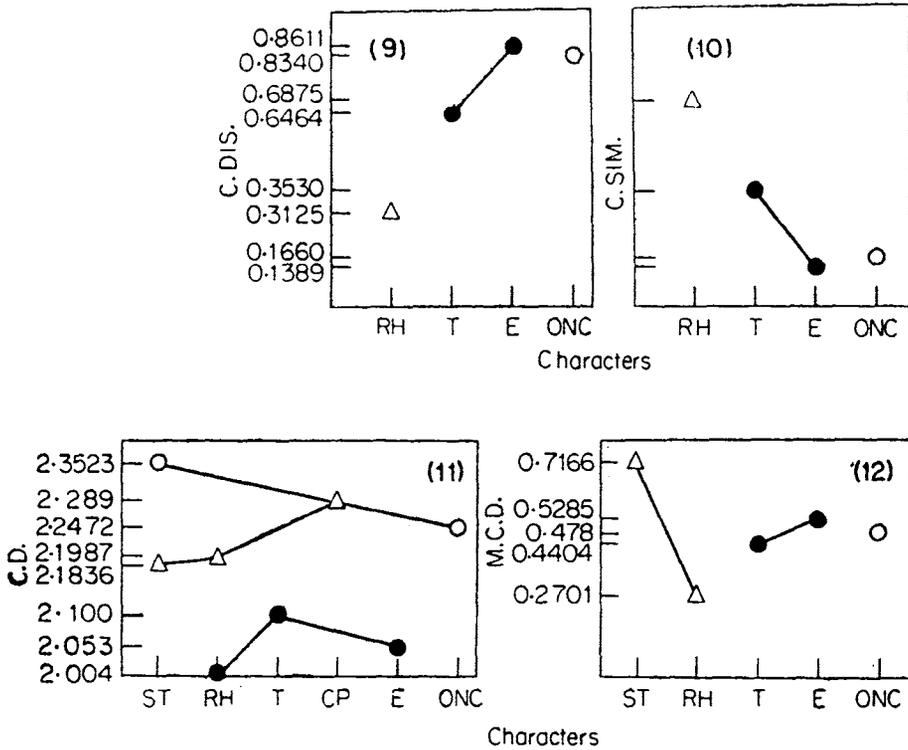
The present form resembles *Raillietina (Raillietina) kordofanensis* Meggitt *et al.*, (1927) in the number of rostellar hooks and number of testes but shows some morphological variations, viz., larger worms, smaller rostellar hooks and longer cirrus pouch. Besides a detailed account of strobila, genitalia and eggs has been described which is not included in the description of *Raillietina (R.) kordofanensis* described by Meggitt *et al.* (1927).

A comparison of two species on the basis of taxonomic analysis (figures 9 to 12) has established the similarity between the two as the values of coefficient of similarity in the structures compared, always exceeded the value of coefficient of dissimilarity.

Type habitat: Small intestine of *C. l. domestica*.

Type locality: Srinagar, District Pauri-Garhwal, U.P., India.

Type specimen: Holotype slide is deposited in the Zoology Museum, University of Garhwal, Srinagar (Garhwal).



Figures 9-12. 9. Coefficient of dissimilarity. 10. Coefficient of similarity. 11. Coefficient of divergence. 12. Mean character difference as compared with different character's different in the specimens of *Raillietina (R.) kordofanensis* of the authors *vis-a-vis* those of Meggitt et Subramanian 1927. Details of abbreviations same as in figures 1-8.

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