

Two New Species of the Genus *Dracunculus* Reichard, 1759 from Snakes

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Abstract. *Dracunculus alii* sp. n. and *D. coluberensis* sp. n. are described. These two are considered quite different from the species described so far, on the basis that in the former the gubernaculum is bifid and the caudal papillae are in twelve pairs. The latter differs from the known species in the nature, form and size of the spicules and the caudal papillae are in ten pairs.

The genus *Dracunculus* Reichard, 1759 (Dracunculidae Leiper, 1912) consists of the following species. 1) *D. medinensis* (Linnaeus, 1758) Gallandant, 1773; 2) *D. globocephalus* Mackin, 1927; 3) *D. houdemeri* Hsu, 1933; 4) *D. fuelleborni* Travassos, 1934; 5) *D. dahomensis* (Neumann, 1895) Moorthy, 1937; 6) *D. oesophagea* (Polonio, 1859) Desportes, 1938; 7) *D. ophidensis* Brackett, 1938 and 8) *D. doi* Chabaud, 1960.

Of these *D. globocephalus* was removed by YAMAGUTI (1961) and a new genus *Chelonidracunculus* was erected on the basis of being the only species with unequal spicules. In the author's opinion the reason for the erection of a new genus is not very valid, hence the species *D. globocephalus* is retained under *Dracunculus*. CHABAUD (1960) also retains *D. globocephalus* under *Dracunculus* only. *D. insignis* (Leidy, 1858) Chandler, 1942 is regarded by CHITWOOD (1933) as a synonym of *D. medinensis* but the author agrees with CHABAUD that it is identical with *D. fuelleborni* Travassos, 1934. As no drawing of the tail end of the male of *D. fuelleborni* was available to the author, he substituted it by CHANDLER's (1942) figure of *D. insignis*. The author agrees with MOORTHY (1937) and BRACKETT (1938) that the description of *D. houdemeri* based on the anterior end of the female only, cannot be regarded as sufficient evidence for establishing a new species. YAMAGUTI (1961) also erected the new genus *Ophiodracunculus* to accommodate the species from the snake, but in the author's view the erection of a new genus should be based on morphological characters rather than on the differences in the host. Thus all the species are retained in *Dracunculus* only. The differentiation in the arrangement of the genital papillae in the male can be regarded as a very reliable character for the classification of the species.

The material consisted of several male worms only, extracted from the body cavity and the mesenteries of several *Natrix piscator*. Female worms were not detected. The hosts were collected at Aurangabad, Maharashtra, India.

The worms are cylindrical in shape and milky white in appearance. The anterior end is blunt and rounded, while the posterior is curved ventrally and ends in a sharply pointed tip. The cuticle is smooth and striae are not visible. The body is of uniform thickness throughout its length, except the tail. The mouth is surrounded by the cuticular rim. The end-on view exhibits two rows of papillae, one external cephalic and another internal labial. The two pairs of external papillae are in the submedian plane. Each papilla is a compound. In the lateral plane the amphids are seen. The internal papillae are in three pairs and are simple.

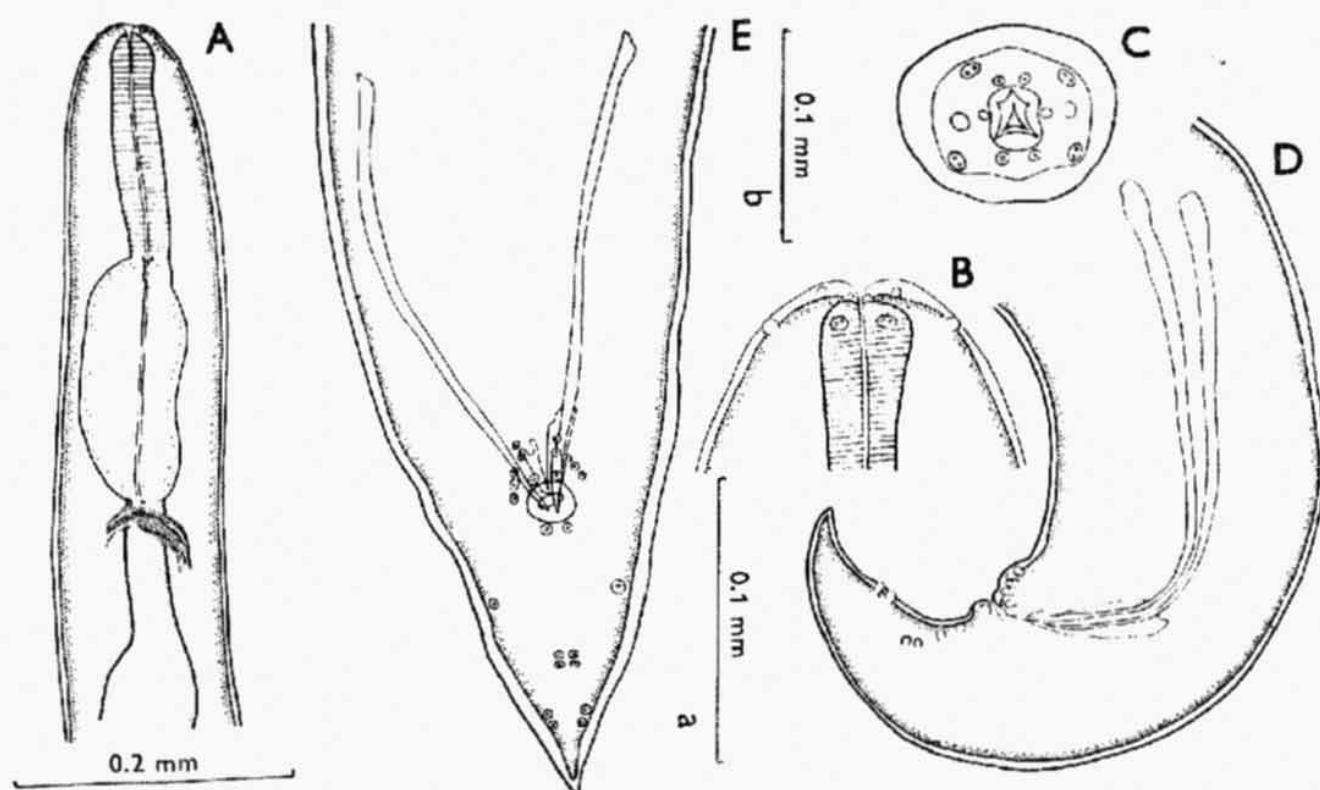


Fig. 1. *Dracunculus alii* sp. n. A-Male: Anterior end, dorsoventral. B-Male: Anterior end, magnified. C-End-on view. D-Male: Posterior end, lateral view. E-Male: Posterior end, ventral view. Scale: 0.2 mm. applies to A; a 0.1 mm. applies to B; b 0.1 mm. applies to C, D and E.

The length of the male varies from 13.09–24.40 mm, its maximum width from 0.17–0.28 mm. The diameter of the head ranges from 0.03–0.04 mm. The nerve ring is present at 0.34–0.58 mm from the head end. The oesophagus consists of a muscular and a glandular portion, the posterior portion being much more expanded than the anterior one. The two portions measure 0.17–0.28 mm and 0.18–0.29 mm respectively.

The tail is curved ventrally and devoid of caudal alae. The cloaca opens at 0.15–0.24 mm from the tip of the tail. There are twelve pairs of caudal papillae-

These are arranged typically as in other species of the genus. There are six pairs of precloacal papillae, of which one pair is immediately in front of the cloaca and mid-ventral in position. Four pairs of papillae are arranged in two groups one on either side of the cloaca. The papillae diverge from somewhat mid-ventral to ventro-lateral position. Another pair of papillae is somewhat in front of these groups and

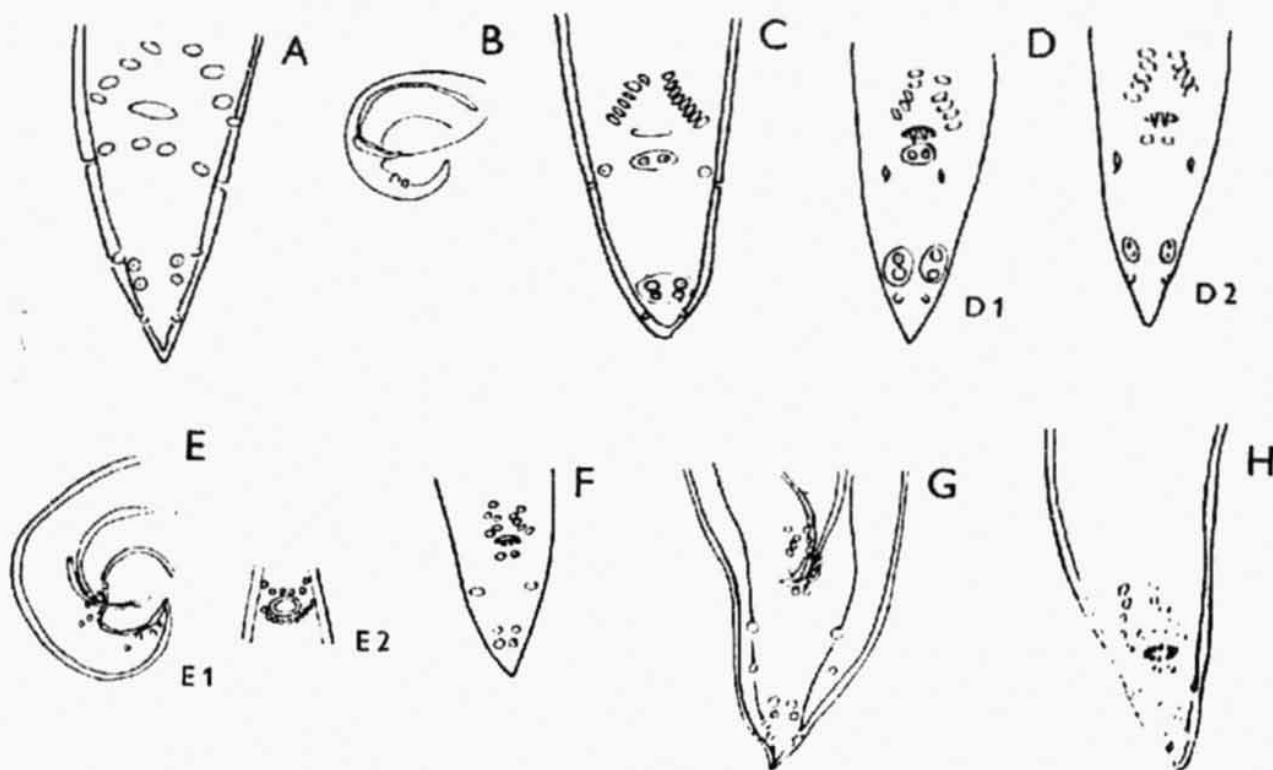


Fig. 2. A—*Dracunculus medinensis* (Linnaeus, 1758) Gallandant, 1773. B—*Dracunculus globocephalus* Mackin, 1927. C—*Dracunculus dahomensis* (Neumann, 1895) Moorthy, 1937. D—*Dracunculus oesophagea* (Polonio, 1859) Desportes, 1938. E—*Dracunculus fuelleborni* Travassos, 1934. F.—*Dracunculus ophidensis* Brackett, 1938. G—*Dracunculus doi* Chabaud, 1960. H—*Dracunculus alii* sp. n.

mid-ventral in position. The postcloacal papillae are arranged in six pairs. One pair is mid-ventral, immediately behind the cloaca. The second pair is at the junction of the first and the second third of the tail and lateral in position. Another two pairs are mid-ventral, grouped together in between the second and the last two pairs. The last two pairs are again very close together but are lateral in position. The spicules are similar and almost equal, measuring 0.23—0.30 mm and 0.22 to 0.29 mm respectively. A well-developed gubernaculum is also present; this is distinctly divided into two arms and has a maximum length of 0.05—0.07 mm with the maximum width of 0.01—0.02 mm.

D. globocephalus is the only species to have unequal spicules. The present species is different from all the known forms in the arrangement of the caudal papillae (as shown in Fig. 2). In view of the differences in the arrangement of the caudal papillae and also taking into consideration the bifid gubernaculum it is regarded as a new species and is named *Dracunculus alii* sp. n. after Professor Syed Mehdi Ali.

In the lungs of one *Coluber helena* we found a single worm. The material was collected at Aurangabad, Maharashtra, India.

The worm is milky white in colour and cylindrical in shape. The anterior end is rounded while the posterior end is sharply pointed. The cuticle is smooth. The

mouth is surrounded by a cuticular ring, which has a pair of wingshaped, posteriorly directed projections and, anteriorly, a small median lip-like conical projection. The cephalic papillae are arranged in two rows; the external papillae are in submedian position and are in two pairs, each compound, with two papillae set together. The inner circle carries three pairs of simple papillae. A pair of amphids is also present.

The worm is 19.75 mm long and has a body diameter of 0.2 mm. The oesophagus is 0.48 mm long, the two component parts being 0.21 mm and 0.27 mm. The posterior end of the oesophagus is much more expanded than the anterior one. The nerve ring is situated at 0.48 mm.

The tail is devoid of caudal alae. There are six pairs of precloacal papillae, of which five pairs are arranged somewhat asymmetrically, and extend

from the ventral to the subventral plane. A single pair of papillae is found immediately in front of the cloaca and is mid-ventral in position. The postcloacal papillae are arranged in four pairs. The first pair is immediately posterior to the cloaca and is mid-ventral. The second pair is at half the distance between cloaca and the tip of the tail and is lateral in position. The fourth pair is also lateral, but the third pair is mid-ventral, with the two papillae arranged one behind the other. The spicules are very broad, thick, short and very sclerotised. Their proximal ends

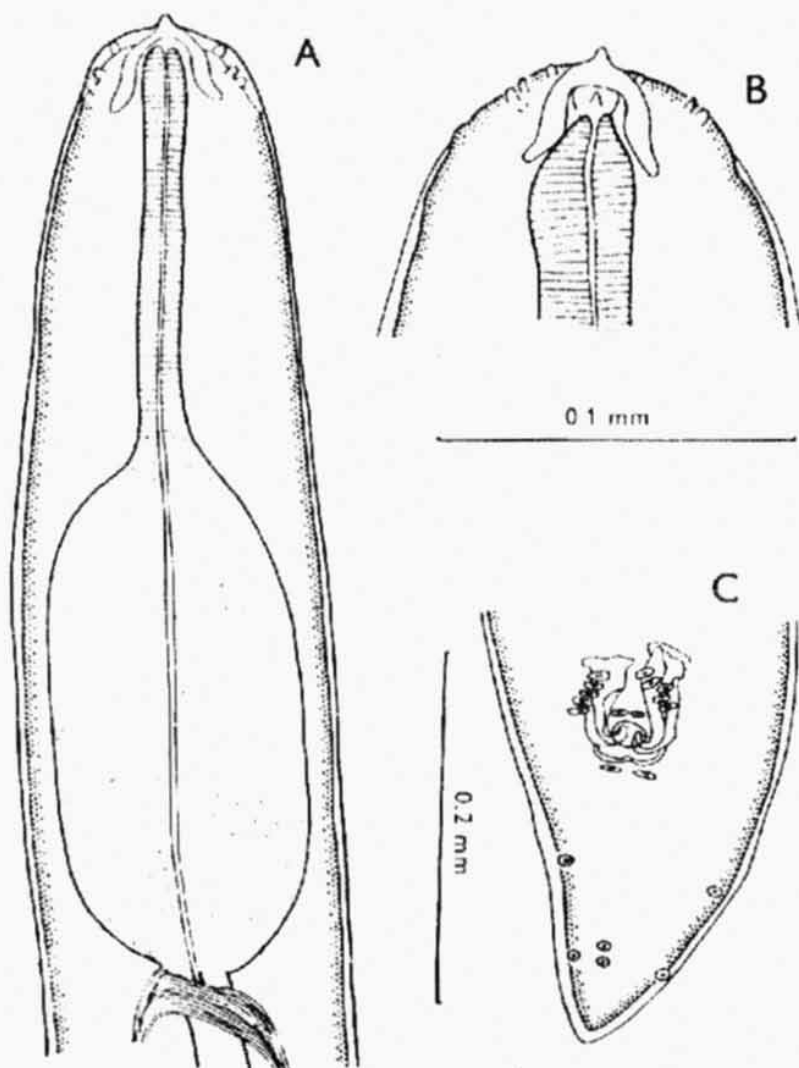


Fig. 3. *Dracunculus coluberensis* sp. n. A-Male: Anterior end, lateral view. B-Male: Anterior end, magnified. C-Male: Posterior end, ventral view. Scale: 0.2 mm applies to A and C, 0.1 mm applies to B.

are curved inwardly. The spicules are almost equal, being 0.07 mm and 0.08 mm. A small gubernaculum is also present. The tail is 0.18 mm long.

The present form resembles *D. ophidensis* Brackett, 1938 in having four pairs of postcloacal papillae, but it has six pairs of precloacal papillae as against five pairs in *D. ophidensis*. Also the arrangement of the papillae is markedly different (see Figs. 2 and 3). The new form also differs from *D. ophidensis* in having thicker and more sclerotised spicules. Hence it is regarded a species different from all known forms and is named *Dracunculus coluberensis* sp. n.

KEY TO THE SPECIES OF THE GENUS *DRACUNCULUS* REICHARD, 1759

- 1 Spicules very unequal *D. globocephalus* Mackin, 1927
Spicules equal or subequal 2
- 2 Precloacal and postcloacal papillae arranged in two lateral rows immediately in front and behind the cloaca *D. fuelleborni* Travassos, 1934
Caudal papillae not arranged as above 3
- 3 Precloacal papillae in four pairs 4
Precloacal papillae more than four pairs 5
- 4 Postcloacal papillae six pairs and precloacals extend from mid-ventral to lateral *D. medinensis* (Linnaeus, 1758) Gallandant, 1773
Postcloacal papillae seven pairs, precloacals mid-ventral and asymmetrical *D. doi* Chabaud, 1960
- 5 Five pairs of precloacal papillae 6
Six pairs of precloacal papillae 8
- 6 Five pairs of postcloacal papillae, spicules 297 μ and 283 μ
. *D. oesophagea* (Polonio, 1859) Desportes, 1938
Four pairs of postcloacal papillae 7
- 7 Spicules larger and acicular, 0.554 mm and 0.523 mm
. *D. ophidensis* Brackett, 1938
Spicules thicker and shorter 0.07 mm and 0.08 mm *D. coluberensis* sp. n.
- 8 Precloacals six to eight pairs, postcloacals five pairs
. *D. dahomensis* (Neumann, 1895) Moorthy, 1937
Postcloacal papillae six pairs *D. alii* sp. n.

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REFERENCES

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| BRACKETT S., Description and life history of the nematode <i>Dracunculus ophidensis</i> sp. n. with a redescription of the genus. J. Parasit. 24: 353–361, 1938. | Madagascar. Seria A. 14: 94–103, 1960. |
| CHABAUD A. G., Deux nematodes parasites de serpents Malgaches. Mem. Inst. scient. | DESPORTES C., <i>Filaria oesophagea</i> Polonio, 1859, Parasite de la couleuvre d'Italie est un <i>Dracunculus</i> Tresvoisin de la Filaire de Medine. Ann. Parasit. hum. comp. 16: 305–326, 1938. |

MOORTHY V. N., A redescription of *Dracunculus medinensis*. J. Parasit. 23: 220—224, 1937.
YAMAGUTI S., Systema Helminthum Vol. III Part I and II. Interscience Publishers Ltd., London, 1961.

YORKE W., MAPLESTONE P. A., The nematode parasites of vertebrates. J. and A. Churchill, London, 1926.

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