

STATUS OF THE SPECIES OF *DJOMBANGIA* BOVIEN, 1926  
(CESTOIDEA : CARYOPHYLLIDEA : LYTOCESTIDAE)

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INTRODUCTION

So far three species have been described in the genus *Djombangia* Bovien, 1926 from India, in addition to the type species *D. penetrans* Bovien, 1926, from Java. An attempt to prepare a key to these species to separate them failed. After examining the type material (Z.S.I. Reg. No. W 7476/1) of *Djombangia clariae* Kundu, Bhattacharya and Datta (1985) and other material of the genus in the collection of Mr. D. K. Kundu (by his kind courtesy), it was discovered that the three Indian species, have been described on the basis of characters which are inconstant, transient, disputed or erroneous. So the author considers them as synonyms of the type species, rendering *Djombangia* monotypic so far.

The citations marked with asterisk were not consulted in original by the author.

SYSTEMATIC ACCOUNT

Class : CESTOIDEA RUDOLPHI, 1808

Subclass : CESTODA CARUS, 1863

Order : CARYOPHYLLIDEA VAN BENEDEN  
(IN CARUS, 1863)

Family : LYTOCESTIDAE Wardle and Mcleod, 1952  
(Syn. *Lallidae* Johri, 1959)

Genus **Djombangia** Bovien

1926. *Djombangia* Bovien, *Vidensk Meddr. dansk naturh. Foren.*, 82 : 157.

*Remarks* : The genus *Djombangia* was proposed by Bovien (1926)\* from the duodenum of the air-breathing catfish, *Clarias batrachus* (Linn.), recovered at Djombang from river Bantas in East Java. Unlike other lytocestids it is structurally peculiar in being distinctly divided into three parts—an anterior globular or triangular scolex, followed by an attenuated neck region and a posterior flattend oval body proper. The scolex almost invariably has a terminal introvert and profusely

provided with glandular cells below the body wall. Quite many of them get concentrated around the introvert which, when the worm is flattened, sometimes give the appearance of a muscularly weak sucker-like structure. Actually there is no sucker. Sahay and Sahay's (1977) Fig. 1 is the most correct illustration of the scolex in *Djombangia*. The neck region is highly contractile, and thus may be short or long after fixing. In overflattened specimens it may look sharply marked off from the body proper. The neck region is also provided with a layer of glandular cells below the body wall. The body proper is flattened and forms more or less shoulders with the neck, depending upon the condition of contraction and relaxation at the time of fixation. It contains all the organ systems of the worm.

The salient features of the genus are :

1. The peculiar division of the body into three regions as discussed above.
2. The formation of a terminal introvert in the scolex and the concentration of glandular cells around it giving a sucker-like appearance ; no actual sucker is present.
3. Highly contractile character of neck region.
4. The ascending coils of the uterus extend anteriorly as far as the testicular field near the shoulder ; the eggs are operculate, may or not be spinuous and embrygnated in the uterus.
5. Seminal receptacle being a transient structure may or may not be distinctly formed.
6. External seminal vesicle is absent.
7. The circus sac, although muscular, is sometimes seen with difficulty ; its orientation is opposite of the orientation of the body, and is disposed so as the genital atrium comes to lie in front of the ovarian commissure.
8. The vitellarian follicles are cortical, surrounding the lateral medullary testicular field, and not at all intruding into the postovarian region. However, in overflattened specimens a few follicles may be pushed behind the medullary ovary.

The normal host of the genus *Djombangia* seems to be the walking catfish, *Clarias batrachus*, but *Heteropneustes fossilis*, another air-breathing catfish, may also serve as possible host as Sahay and Sahay (1977) have reported. They are the parasites of duodenum of the gut of the host. The scolex serves as the holdfast as well as the penetrating organ. Due to the action of the glandular cells of the scolex and the

neck regions on the duodenal wall of the host, 'diverticulosis' is caused. The diverticula so formed in the duodenal wall may or may not be perforated, depending upon the severity of the action of the glandular cells. The report of occurrence of the genus in intestine or stomach of the host needs corroboration, the genus probably being location-specific in the duodenum.

### **Djombangia penetrans** Bovien

1926. *Djombangia penetrans* Bovien, *Vidensk Meddr. dansk naturh. Foren.*, 82 : 157.  
 1974. *Djombangia indica* Satpute and Agarwal, *Indian J. Expl. Biol.*, 12 (4) : 373.  
 1977. *Djombangia caballeroi* Sahay and Sahay, In : *Excercita Parasitologica en memoria del doctor Eduardo Y Caballero*, Institute de Biologia Publicaciones Especiales, Mexico, 4 : 371.  
 1980. *Djombangia indica* : Satpute and Agarwal, *Proc. Indian Acad. Parasitol.*, 1 : 13.  
 1985. *Djombangia clariae* Kundu, Bhattacharya and Datta, *Bull. zool. Surv. India*, 7 (2-3) : 151.

*Remarks* : Since the description of the type species, *D. penetrans* Bovien, 1926 from the duodenum of *Clarias batrachus* from Java, three more species have been added to the genus from India. They are :

*D. indica* satpute and Agarwal, 1974 in the duodenum of *Clarias batrachus* from Raipur, Madhya Pradesh ; *D. caballeroi* Sahay and Sahay, 1977 in the stomach of *Heteropneustes fossilis* from Chotanagpur, Bihar State ; *D. clariae* Kundu *et al.*, 1985 in the intestine of *Clarias batrachus* from Bongaon, West Bengal.

The type species, *D. penetrans*, is originally described to possess minute spines on the eggs. In *D. caballeroi* and *D. clariae* the eggs are reported to be smooth and unspined. Satpute and Agarwal (1974) observed that the eggs in their species *D. indica* are "smooth unspined", whereas, while giving detailed taxonomical account of the species on the basis of the same material, they (1980) mentioned the eggs to be "covered with 3  $\mu$  spinuous projections". Mackiewicz (1972) referred Bovien (1926)\* and Löser (1965)\* to state that the eggs in *D. penetrans* and *Khawia iowensis* become finely spinuous due to the secretion of the glandular part of the uterus when they pass through it and not before. But he does not loose time to remark on the same page that "These data, however, do not explain their functions with respect to non-spinuous eggs, which include most caryophyllidean eggs." The remark seems to be cryptic and meaningful. The exact nature of these fine structures, which have been called 'spines,' is not known. It is also not known whether they are part and parcel of the eggs and remain attached or disappear after doing the needful. That is why

the author is not much inclined to give weight to this character in *Djombangia* to separate species till more information becomes available. Mackiewicz (1981) has opined that seminal receptacle in *D. penetrans* is a transient structure which may or may not be distinctly formed. So, it should not be used for distinguishing species. The author concurs with him. Sahay and Sahay (1977) have mentioned that the vitel-line follicles in their species remain restricted up to the ovarian level, but in overflattened specimens a few of them may slip into the post-ovarian space as reported in *D. indica*.

The three Indian species have been differentiated from the type species of the genus or among themselves on the basis of characters which are incostant, transient and disputed or develop due to overflattening of the worm. Such characters have been discussed above at length, and therefore they are not of systematic value. The author therefore considers *D. indica* Satpute and Agerwal, 1974, *D. caballeroi* Sahay and Sahay, 1977, and *D. clariae* Kundu *et al.*, 1985 as synonyms of the type species, *D. penetrans* Bovien, 1926. The genus *Djombangia* Bovien, 1926 is therefore monotypic so far.

#### SUMMARY

The genus *Djombangia* Bovien, 1926 is reviewed. *D. caballeroi* Sahay and Sahay, 1977 is believed to have been in part erroneously described so far as the male & female terminal ducts are concerned. A careful comparison of *Djombangia indica* Satpute and Agarwal, 1964, *D. caballeroi* Sahay and Sahay, 1977 and *D. clariae* Kundu, Bhattacharya and Datta, 1985 with the type species *D. penetrans* Bovien, 1926 and among themselves reveals that they have been described and distinguished on the basis of inconstant, transient and disputed characters, or features which develop due to overflattening of the worm. So, they are relegated to synonymy with the type species. The genus *Djombangia* is therefore monotypic so far.

#### ACKNOWLEDGEMENT

The author is thankful to the Director, Zoological Survey of India, Calcutta for laboratory and library facilities. He thankfully acknowledges the interest shown by Dr. A. K. Ghosh, Deputy Director, in the work. Special thanks are due to Mr. D. K. Kundu, Sr. Zoological Assistant, for allowing him to study some material in his collection and to see the manuscript of his paper in press.

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