

Aleksandr RYSS, Eino KRALL

CLASSIFICATION OF THE SUPERFAMILIES *TYLENCHOIDEA* AND *HOPLOLAIMOIDEA* WITH NOTES ON THE PHYLOGENY OF THE SUBORDER *TYLENCHINA* (NEMATODA)

Siddiqi (1971) thoroughly reviewed the history of classification of nematodes of the suborder *Tylenchina*. Recently, Golden (1971), Raski and Siddiqi (1975), Andrásy (1976) and Skarbilovich (Скарбилович, 1980) have published some more data on the topics.*

Different criteria have been used in subdividing the suborder into superfamilies. Golden (1971) proposed the superfamily *Atylenchoidea* including the single family *Atylenchidae* on the basis of the presence of head setae only. According to all other morphological features, this group is closely related to the family *Tylenchidae* within the *Tylenchoidea*. In the same paper by Golden, the superfamily *Heteroderoidea* has been proposed for various taxonomic groups possessing endoparasitic spherical (swollen) females. As a result, such closely related forms as *Pratylenchus* and *Nacobbus* proved to be in different superfamilies.

The stylet length and situation of bursa in males have been used as criteria in subdividing related criconematoid species into the following superfamilies: *Tylenchocriconematoidea*, *Criconematoidea* and *Tylenchuloidea* (Raski, Siddiqi, 1975).

Classification of *Tylenchina* according to the structure of esophagus has been used most commonly, and apparently such an approach seems to be the most successful one. In the superfamily *Neotylenchoidea* (Thorne, 1941) Jairajpuri et Siddiqi, 1969, the median bulb of the esophagus is either absent or is represented by a spindle-shaped swelling which is devoid of myofibrils and inner refractive cuticular thickening. In *Criconematoidea* (Taylor, 1936) Geraert, 1966, the median bulb is hypertrophied and so it becomes almost amalgamated with the esophageal procorpus.

The esophageal structure in the superfamily *Tylenchoidea*

Seinhorst (1971) and Sher (1973) have demonstrated the importance of the esophageal structure in the system of the classification of *Tylenchoidea*. Siddiqi (1971) presented a detailed classification of the superfamily using this criterium.

Seinhorst (1971) indicated that in the superfamily *Tylenchoidea* the phenomenon of the overlapping of the intestine** by esophageal glands

* After the presentation of this paper for printing, a new publication on the topic came out which can, however, not be discussed here. See Siddiqi. The origin and phylogeny of the nematode orders *Tylenchida* Thorne, 1949 and *Aphelenchida* n. ord. — Helminthol. Abstr., Ser. B. Plant Nematology, 1980, 49, 143—170.

** According to the terminology generally accepted in the field of nematology, the mid-intestine will be designated as «intestine» in this paper.

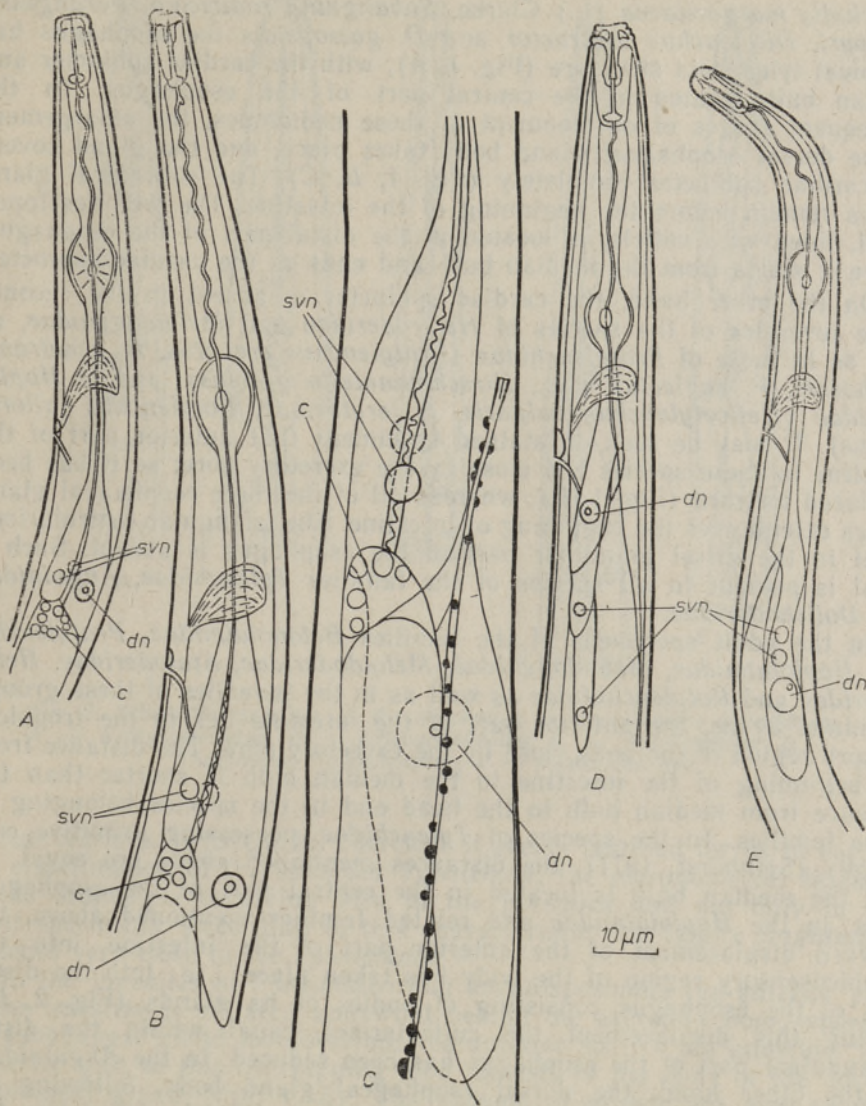


Fig. 1. Structure of the esophagus. A—C — *Anguina* sp. n. from *Carex acuta* L.: A — second-stage juvenile, B — third-stage juvenile (female), C — adult male; D — *Pratylenchus penetrans*, fourth-stage juvenile (female); E — *Pseudhahlenchus anchilisposomus*, third-stage juvenile (female); c — cardiac sphincter; dn — nucleus of dorsal esophageal gland; svn — nuclei of subventral esophageal glands.

takes place as a result of the change of length (elongation) of the gland bodies and the displacement of the esophago-intestinal junction.

However, investigation of nematode juveniles undertaken by us demonstrated that two different processes take place here. All investigations were carried out on stained nematodes, prepared according to the technique published elsewhere (Рысс, 1981). The determination of life stages of nematodes has been carried out using the criteria described in the same paper mentioned above.

It has been established that in the second-stage juveniles of *Anguina millefolii*, *Anguina* sp. n. 1 from *Carex acuta* L., *Anguina* sp. n. 2 from

Anaphalis margaritacea (L.) Clarke, *Subanguina radicolica*, *Paranguina agropyri*, *Ditylenchus destructor* and *D. galeopsidis* the esophagus has a typical tylenchoid structure (Fig. 1, A), with the cardiac sphincter and median bulb located in the central part of the esophagus. In the subsequent stages of development of these nematodes, the enlargement of the dorsal esophageal gland body takes place, and the gland covers the cardiac sphincter completely (Fig. 1, B, C). The subventral gland bodies remain before the beginning of the intestine. The well-developed canal, lined with cuticle, is located in the distal part of the esophagus, where it starts from the median bulb and ends at the cardiac sphincter.

On the other hand, the cardiac sphincter is absent in the second-stage juveniles of the species of *Heteroderidae* and *Meloidogynidae*, as well as in those of *Pratylenchidae* (*Pratylenchus crenatus*, *P. penetrans*, *P. thornei*, *P. neglectus* a. o., *Hirschmanniella gracilis*), and of *Hoplolaimidae* (*Helicotylenchus vulgaris*, *H. erythrinae*, *Rotylenchus fallorobustus*). It may be seen on stained specimens that anterior part of the intestine in these species lies close by the excretory pore; so it has been displaced forward (Fig. 1, D), whereas all of the three esophageal gland bodies extend over the beginning of intestine. The triangular cuticularized canal in the distal glandular part of the esophagus is absent. Such a canal is present in all species of the families *Tylenchidae*, *Anguinidae* and *Dolichodoridae*.

In the adult specimens of the families *Belonolaimidae*, *Pratylenchidae*, *Hoplolaimidae*, *Meloidogynidae*, *Meloidoderidae*, *Ataloderidae*, *Heteroderidae* and *Rotylenchulidae* as well as in the juveniles of these groups examined by us, the anterior part of the intestine lies in the trophico-sensory region of the body close by the excretory pore. The distance from the beginning of the intestine to the median bulb is shorter than the distance from median bulb to the head end in the species belonging to these families. In the species of *Tylenchidae*, possessing primitive esophagus (Seinhorst, 1971), the distances mentioned above are equal, so that the median bulb is located in the central part of the esophagus. Thus, in the *Hoplolaimidae* and related families mentioned above, the forward displacement of the anterior part of the intestine into the trophicosensory region of the body has taken place, i. e., into the distal part of the esophagus consisting of bodies of its glands (Fig. 2, E). During this displacement the cuticularized canal within the distal (glandular) part of the esophagus has been reduced: In the *Anguinidae*, on the other hand, the dorsal esophageal gland body, following its growth during ontogenesis, undergoes a backward displacement into the trophicogenital region of the body (Fig. 2, D).

In some figures published by different authors, the presence of a canal of considerable length located in the distal (glandular) part of the esophagus is indicated for several species of the *Hoplolaimidae* as well as for the genera *Pratylenchoides* and *Rotylenchulus*. Nevertheless, the cardiac sphincter is always absent in such cases, and the same canal, if present, is never developed to such an extent as the triangular canal in the species of the *Anguinidae*. This problem needs further investigation. However, in most species of the *Hoplolaimidae* and related families the canal in the distal (glandular) part of the esophagus has been clearly reduced.

It is well known that adult specimens of various groups often undergo considerable morphological changes during their ontogenetic development. Classification of higher systematic categories (e. g., types and classes) in many groups of animals is carried out using the morpho-

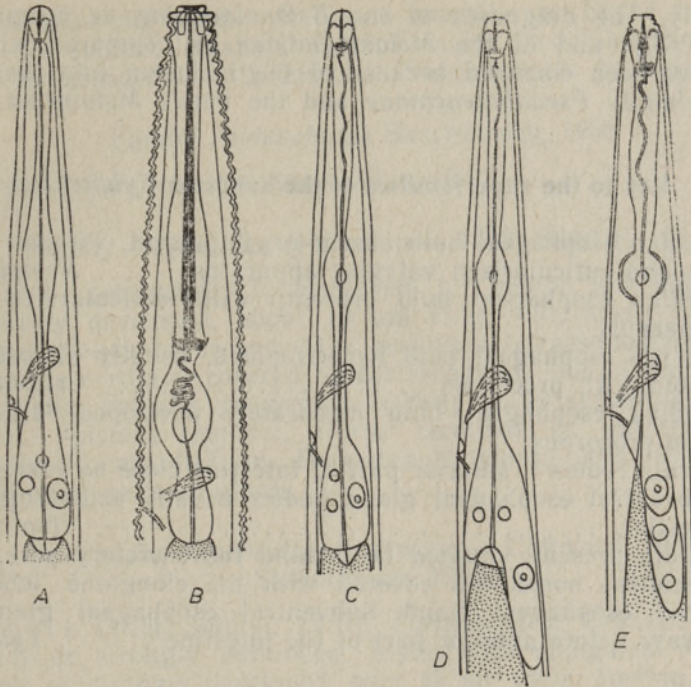


Fig. 2. Schematic structure of the esophagus in the suborder *Tylenchina*.
 A — *Neotylenchoidea*; B — *Criconematoidea*; C — *Tylenchoidea*; D —
Anguinidae (*Tylenchoidea*); E — *Hoplolaimoidea*.

logical features of juveniles. Therefore it seems justified for us to use, in the classification of the suborder *Tylenchina*, the morphological features of the esophagus occurring also in the juveniles and not only in the adult specimens. According to this characteristic, the family *Anguinidae* becomes very close to the *Tylenchidae*.

In the juveniles of *Pseudhalenchus anchilisposomus* the anterior part of the intestine is situated somewhat behind the excretory pore, whereas the esophageal gland lobe overlaps the anterior part of the intestine. The posterior part of this overlapping lobe consists of the body of the dorsal esophageal gland (Fig. 1, E). The subventral glands are also located behind the anterior part of the intestine. According to this feature, *Pseudhalenchus* considerably differs from all other *Anguinidae* and therefore the subfamily *Pseudhalenchinae* Siddiqi, 1971 is transferred to the *Belonolaimidae*. The genus *Safianema* Siddiqi, 1980, differs from *Pseudhalenchus* by the shape of the spicules and spermatheca and by the size of sperm cells. We consider such small differences insufficient for the establishment of a new genus. Therefore *Safianema* is synonymized with *Pseudhalenchus*, and *Safianema lutonense* is considered as *Pseudhalenchus lutonensis* (Siddiqi, 1980) comb. n.

We assume that the superfamily *Tylenchoidea* sensu Siddiqi (1971) is too heterogeneous. It may be well subdivided into two separate taxa differing each from other in the presence or absence of the cardiac sphincter.

Keys to the superfamilies of the suborder *Tylenchina* and to the families of the superfamilies *Tylenchoidea* and *Hoplolaimoidea* are given below. Within these two superfamilies, short diagnoses are given for

each family. The diagnoses of the *Belonolaimidae* as compared with Siddiqi (1970), and of the *Meloidogynidae* as compared with Wouts (1973) have been emended because of the inclusion into these groups of the subfamily *Pseudhalenchinae* and the genus *Meloinema*, respectively.

Key to the superfamilies of the suborder *Tylenchina*

- 1 (2). Median esophageal bulb absent or, if present, without myofibrillae and cuticularized valvular apparatus *Neotylenchoidea*
- 2 (1). Median esophageal bulb present, with cuticularized valvular apparatus.
- 3 (4). Median esophageal bulb hypertrophied, usually almost amalgamated with procorpus *Criconematoidea*
- 4 (3). Median esophageal bulb moderately developed, differentiated from procorpus.
- 5 (6). Cardia reduced, anterior part of intestine close by excretory pore. Subventral esophageal gland bodies usually extending over the intestine *Hoplolaimoidea*
- 6 (7). Cardia present, situated far behind the excretory pore, in adult specimens sometimes covered with the elongated lobe of the dorsal esophageal gland. Subventral esophageal gland bodies always before anterior part of the intestine *Tylenchoidea*

Superfamily *Tylenchoidea* (Örley, 1880) Chitwood et Chitwood, 1937

Diagnosis (emended). *Tylenchina*. Median esophageal bulb with vulvular apparatus, not hypertrophied. Cardiac sphincter present but in adult stage of development sometimes covered by the elongated lobe of the dorsal esophageal gland. Subventral esophageal gland bodies always situated before anterior part of the intestine. Triangular cuticularized canal between the esophageal gland bodies behind isthmus present. Esophageal glands in second-stage juveniles of equal length, situated in front of the cardiac sphincter. Occurring as mycochilophagous forms or plant parasites.

Key to the families of *Tylenchoidea*

- 1 (2). Head with setae *Atylenchidae*
- 2 (1). Head without setae.
- 3 (4). Amphidial apertures slit-like, postlabial *Psilenchidae*
- 4 (3). Amphidial apertures pore-like, situated on lips.
- 5 (6). Stylet and cephalic framework strongly developed, stylet over 15 μm long *Dolichodoridae*
- 6 (5). Stylet and cephalic framework weakly developed, stylet under 15 μm long.
- 7 (8). Cardia in adult specimens covered by the lobe of dorsal esophageal gland; tail conical *Anguinidae*
- 8 (7). Dorsal esophageal gland not forming a lobe, cardia well developed; tail usually elongated, often filiform *Tylenchidae*

Family *Tylenchidae* Örley, 1880

Diagnosis (after Siddiqi, 1971, emended). *Tylenchoidea*. Cephalic framework and stylet weakly developed, stylet under 15 μm long. Median

esophageal bulb with weakly developed musculature. Bursa adanal, tails in both sexes similar, usually filiform. Females prodelphic. Ectoparasites of plants or associated with insects. Predominantly in moist biotopes.

Family *Atylenchidae* Skarbilovich, 1959

Diagnosis. *Tylenchoidea*. See Golden, 1971.

Family *Anguinidae* (Paramonov, 1962) Siddiqi, 1971

Diagnosis (emended). *Tylenchoidea*. Lip region low and flattened. Stylet weakly developed, about 10 μm long, with small basal knobs. Esophageal glands in second-stage juveniles intraesophageal, in adult specimens the cardia is covered by the elongated lobe of the dorsal esophageal gland. Females prodelphic, usually many synchronous eggs in the uterus. Spicules compact. Bursa terminal or subterminal. Tail elongate-conoid, not filiform. Parasites of plants and insects, some species forming galls on plants.

Family *Dolichodoridae* (Chitwood et Chitwood, 1950)
Skarbilovich, 1959

Diagnosis (after Siddiqi, 1970). *Tylenchoidea*. Cephalic framework moderately or strongly developed. Stylet with elongated basal knobs, moderately or strongly developed, over 15 μm long. Median esophageal bulb spherical with strongly developed musculature. Bursa usually terminal. Plant ectoparasites. Mycochilophagy absent.

Family *Psilenchidae* (Paramonov, 1967) Andrásy, 1976

Diagnosis (emended). *Tylenchoidea*. Amphidial apertures slit-like, postlabial. Tail filiform, bursa adanal. Cephalic framework and stylet weakly developed.

Superfamily *Hoplolaimoidea* (Filipjev, 1934)
Paramonov, 1967

Diagnosis (emended). *Tylenchina*. Median esophageal bulb not hypertrophied, with valvular apparatus. Cardiac sphincter absent. Both in juveniles and in adults the subventral esophageal gland bodies usually extending over the intestine; all three esophageal glands form one or two lobes which lie on the anterior part of the intestine. Triangular cuticularized canal behind isthmus between esophageal gland bodies usually absent. Anterior part of the intestine displaced forward and located near the excretory pore. Plant parasites. Many species with swollen sedentary females.

Key to the families of *Hoplolaimoidea*

- 1 (2). Dorsal esophageal gland extending past subventral ones, exceptionally vermiform nematodes *Belonolaimidae*
- 2 (1). Dorsal esophageal gland not extending past subventral ones, females often swollen.
- 3 (4). Esophageal glands forming a wrap-round over anterior end of intestine, being longest ventrally; females swollen
..... *Rotylenchulidae*

- 4 (3). Esophageal glands not so as in *Rotylenchulidae*, extending dorsally or ventrally over intestine.
- 5 (6). Head low, flattened *Pratylenchidae*
- 6 (5). Head hemispherical or conical.
- 7 (8). Adult females vermiform, sometimes moderately swollen. Ecto- and semiendoparasites of plant roots *Hoplolaimidae*
- 8 (7). Adult females swollen, sedentary endoparasites of plant roots.
- 9 (10). Excretory pore in females at the level of median bulb or in front of it *Meloidogynidae*
- 10 (9). Excretory bulb in females behind the median bulb.
- 11 (12). Adult females becoming cysts *Heteroderidae*
- 12 (11). Adult females remain soft-bodied.
- 13 (14). Cuticle in females smooth *Ataloderidae*
- 14 (13). Cuticle in females annulated *Meloidoderidae*

Family *Hoplolaimidae* (Filipjev, 1934) Wieser, 1953

Diagnosis. *Hoplolaimoidea*. See Кралль, 1978.

Family *Ataloderidae* (Wouts, 1973) Krall et Krall, 1978

Diagnosis. *Hoplolaimoidea*. See Кралль, Кралль, 1978.

Family *Belonolaimidae* (Whitehead, 1959) Siddiqi, 1970

Diagnosis (emended). *Hoplolaimoidea*. Esophageal gland bodies form a lobe over the anterior part of intestine. Dorsal esophageal gland extends past subventrals. Females pro- and didelphic. Plant root ectoparasites.

Family *Meloidoderidae* (Golden, 1971) Krall et Krall, 1978

Diagnosis. *Hoplolaimoidea*. See Кралль, Кралль, 1978.

Family *Meloidogynidae* (Skarbilovich, 1959) Wouts, 1973

Diagnosis (emended). *Hoplolaimoidea*. In adult females the whole body or only its posterior part swollen. Anus terminal, vulva terminal or subterminal. Cuticle in the region of vulva and anus mostly with characteristic figure like a «finger-print». Excretory pore at the level or in front of median bulb, sometimes varying in position in males and females. Esophageal glands extend over the intestine, mostly ventrally; dorsal esophageal gland does not extend past subventrals. Females didelphic. Males vermiform without bursa. Sedentary plant root endoparasites.

Family *Heteroderidae* Skarbilovich, 1947

Diagnosis. *Hoplolaimoidea*. See Кралль, Кралль, 1978.

Family *Pratylenchidae* (Thorne, 1959) Siddiqi, 1963

Diagnosis. *Hoplolaimoidea*. See Siddiqi, 1963.

Family *Rotylenchulidae* (Husain et Khan, 1967) Husain, 1976

Diagnosis. *Hoplolaimoidea*. See Siddiqi, 1971 (*Rotylenchulinae*).

Addendum

Subfamily *Pseudhalenchinae* Siddiqi, 1971

Diagnosis (emended). *Belonolaimidae*. Cephalic framework and stylet weakly developed, stylet under 11 μm long. Median esophageal bulb small, ovoid. Females prodelphic. Tail filiform. Bursa subterminal.

Discussion

Paramonov (Парамонов, 1967) proposed the superfamily *Hoplolaimoidea* and separated it from the *Tylenchoidea* in having strongly developed cephalic sclerotization, stylet and median esophageal bulb as well as by lacking elongated tails, so characteristic of tylenchoid nematodes. However, it became very soon clear, that there exist some «intermediate» groups between the *Hoplolaimoidea* and *Tylenchoidea* e. g., the genus *Tylodorus* and some species of the former genus *Tetylenchus* now transferred to *Leipotylenchus* and *Triversus*.

In the light of new morphological data, Siddiqi (1971) subjected the problem to further examination, considering *Hoplolaimoidea* sensu Paramonov synonymous with the superfamily *Tylenchoidea*. We are of the opinion that it is necessary to re-establish the superfamily *Hoplolaimoidea*, but with an emended diagnosis.

In the characteristics of *Hoplolaimoidea*, Paramonov has especially stressed the evolutionary trends which he called the ecological-morphological characteristics in this group. In his opinion, the *Hoplolaimoidea* were precocious in their phylogeny and highly adapted to parasitism on plant roots. The phylogenetic development of this superfamily has resulted in several parallel lines raising sedentary root endoparasites with swollen females (Парамонов, 1970, p. 25).

The specialization of nematodes in plant parasitism leads to the perfection of extraintestinal nutrition following the reduction of the posterior esophageal musculature and to the accentuation of esophageal glands (Maggenti, 1978). It is obvious that these processes provoke a reduction of the cardiac sphincter. The loss of cardia may be considered as a sign of high specialization in extraintestinal nutrition. This is in accordance with the characteristics of the *Hoplolaimoidea* as highly specialized plant root parasites, as stated by Paramonov.

In sedentary endoparasitic females, the swelling of body takes place immediately behind the median esophageal bulb and leads to an enlargement of organs situated in the swollen region of the body, whereas the esophageal glands which play an important role in the nutrition of the enlarged females, also show considerable growth. In nematodes with tylenchoid esophagus, the cardiac region is attached to the body wall. The enlargement of esophageal glands and the swelling of body may occur only in case when the cardiac region loses its connection with the body wall. In the *Hoplolaimoidea*, this happened following the forward displacement of the anterior part of the intestine into the trophicosensory region of the body. Thus, reduction of the cardia and the forward displacement of the intestine into the trophicosensory region may be considered as preconditions for forming the swollen body in adult endoparasitic females. The evolutionary trends of the *Hoplolaimoidea* mentioned by Paramonov possibly arise from the morphological features in this superfamily.

Paramonov attached great importance to the cephalic sclerotization

and stylet development in nematodes, whereas he considered the small stylet and the weakly developed cephalic framework as primitive features. He emphasized that the reinforcement of cephalic sclerotization and of the stylet occurred in the course of the evolution. But now it is clear that these phenomena occur independently in different superfamilies of *Tylenchina* (*Tylenchoidea*, *Hoplolaimoidea* and *Cricone-matoidea*). The groups possessing an exceptionally great stylet (*Cricone-matidae*, *Belonolaimidae*, *Dolichodoridae*) are known to be root ectoparasites. It is obvious that the hypertrophy of the stylet should be associated with a specialization in root ectoparasitism. In the families mentioned above, the median esophageal bulb is also strongly developed, showing apparently a functional correlation with the long stylet.

According to the structure of the esophagus, the superfamily *Tylenchoidea* should be regarded as the most primitive one in the suborder *Tylenchina*. In the *Neotylenchoidea* there occurred a reduction of the median bulb, in the *Hoplolaimoidea* — a reduction of the cardiac sphincter, and in the *Cricone-matoidea* — the secondary reinforcement of the median bulb associated with a strong development of stylet following specialization in ectoparasitism (Fig. 2).

Taking into consideration the development of the stylet and cephalic sclerotization, the families *Atylenchidae* and *Tylenchidae* should be regarded as the most primitive ones in the superfamily *Tylenchoidea*. As a rule, these groups occur in moist biotopes, and many species reveal the ability of mycochilophagy. It may well be that the occurrence in moist biotopes and nutrition on mushroom mycelium represent the initial primitive features for the whole suborder *Tylenchina* (Парамонов, 1970).

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Academy of Sciences of the USSR,
Zoological Institute

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Academy of Sciences of the Estonian SSR,
Institute of Zoology and Botany

Aleksandr RÖSS, Eino KRALL

ÜLEMSUGUKONDADE TYLENCHOIDEA JA HOPLOLAIMOIDEA KLASSIFIKATSIOON MÄRKUSTEGA ALAMSELTSI TYLENCHINA (NEMATODA) FÜLOGENEESI KOHTA

Ösofageaalnäärmete paigutuse ja kardiaalsfinkteri olemasolu poolest teise arengujärgu vastsetel on taimeparasiitsete nematoodide sugukonna *Anguinidae* esindajad lähedased sugukonnale *Tylenchidae*. Angviniidide sugukonda kuuluvate liikide hilisemas arengujärgus suureneb söögitoru dorsaalnääre mõõtmetelt ning varjab seejuures kardiaalsfinkteri. Ülemsugukond *Tylenchoidea* sensu Siddiqi, 1971 on heterogeenne ning jaotatakse uute morfoloogiliste andmete põhjal kaheks iseseisvaks taksoniks, mis erinevad teineteisest kardiaalsfinkteri olemasolu või puudumise poolest. Artiklis on esitatud ülemsugukondade *Tylenchoidea* ja *Hoplolaimoidea* ning neisse rühmadesse kuuluvate sugukondade diagnoosid ja määramistabelid, samuti nematoodide alamseltsi *Tylenchina* fülogeneesi lühiisloomustus.

Александр РЫСС, Эйно КРАЛЛЬ

КЛАССИФИКАЦИЯ НАДСЕМЕЙСТВ TYLENCHOIDEA И HOPLOLAIMOIDEA С ЗАМЕЧАНИЯМИ ПО ФИЛОГАНИИ ПОДОТРУДА TYLENCHINA (NEMATODA)

Обсуждаются критерии, используемые разными авторами для обоснования надсемейств в подотряде *Tylenchina*. Наиболее распространенной является классификация подотряда на основании строения пищевода.

Личинки второй стадии развития видов *Ditylenchus* и *Anguina* семейства *Anguinidae* имеют тиленхоидное строение пищевода. У них присутствует кардиальный сфинктер, все железы пищевода одинаковой длины и находятся впереди кардиального сфинктера. На более поздних стадиях развития происходит увеличение дорсальной железы пищевода, которая покрывает кардиальный сфинктер и в виде лопасти лежит на начале кишечника. У *Hoplolaimoidea*, *Pratylenchidae* и ряда других семейств кардиальный сфинктер отсутствует. У личинок и половозрелых особей железы пищевода лежат в виде одной или двух лопастей на начале кишечника.

В 1971 г. М. Р. Сиддики свел предложенное в 1967 г. А. А. Парамоновым надсемейство *Hoplolaimoidea* в синоним надсемейства *Tylenchoidea*. Надсемейство *Tylenchoidea* sensu Siddiqi, 1971 гетерогенно по строению дистальной части пищевода, образованной телами его желез, и представляет собой два таксона. В статье *Hoplolaimoidea* восстанавливается в ранг самостоятельного надсемейства, диагноз которого дополняется данными строения пищевода.

1. Надсемейство *Tylenchoidea*. Диагноз: *Tylenchina*. Метакорпальный бульбус с клапаном, не гипертрофирован. Кардиальный сфинктер имеется, у половозрелых особей иногда скрыт под увеличенной лопастью дорсальной железы пищевода. Тела субвентральных желез всегда перед началом кишечника. Имеется трехгранный кутикуляризованный канал позади истмуса между телами желез пищевода. У личинок второй стадии железы пищевода одинаковой длины, находятся впереди кардиального сфинктера. Часть форм — микохилофаги, остальные — паразиты растений. Типовое семейство: *Tylenchidae*. Другие семейства: *Anguinidae*, *Atylenchidae*, *Dolichodoridae*, *Psilenchidae*.

2. Надсемейство *Hoplolaimoidea*. Диагноз: *Tylenchina*. Метакорпальный бульбус с клапаном, не гипертрофирован. Кардиальный сфинктер отсутствует. У личинок и половозрелых особей тела субвентральных желез обычно позади начала кишечника. Все три железы пищевода в виде одной или двух лопастей на передней части кишечника. Трехгранный кутикуляризованный канал позади истмуса между телами желез пищевода обычно отсутствует. Начало кишечника смещено вперед и находится вблизи выделительной поры. Паразиты растений: многие виды с седентарными вздутыми самками. Типовое семейство: *Hoplolaimidae*. Другие семейства: *Belonolaimidae*, *Ataloderidae*, *Heteroderidae*, *Meloidoderidae*, *Meloidogynidae*, *Pratylenchidae*, *Rotylenchulidae*.

Род *Pseudhalenchus* по строению дистальной части пищевода личинок и половозрелых особей относится к надсемейству *Hoplolaimoidea* и входит в состав семейства *Belonolaimidae* как подсемейство *Pseudhalenchinae*. Род *Sajianema* рассматривается как синоним *Pseudhalenchus*, а вид *Sajianema luttonense* — как *Pseudhalenchus luttonensis* (Siddiqi, 1980) comb. n.

Дается краткая характеристика филогении подотряда *Tylenchina*. Наиболее примитивной группой является надсемейство *Tylenchoidea*. У *Neotylenchoidea* наблюдается редукция метакорпального бульбуса, у *Hoplolaimoidea* — редукция кардиального сфинктера, у *Criconematoidea* — вторичное усиление метакорпального бульбуса в связи с мощным развитием стилета, вызванным специализацией к эктопаразитизму.