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MICROSCOPIC STUDY ON SOME OF THE PARASITES THAT AFFECT ROCK PIGEON (*COLUMBA LIVIA* GMELIN, 1789) (AVES: COLUMBIDAE) IN QENA, EGYPT

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ABSTRACT

The study was conducted to identify some different helminth parasites infecting Rock pigeons in Qena province. The gastro-intestinal tracts of 32 specimens of pigeon (*Columba livia*) were dissected parasitologically for detect helminthes infection. Of these, 11 (34.3%) were infected by 3 species of helminths, comprising 2 species of cestodes and one species of common nematodes *Ascaridia columbae* 8 (25%), The infection with cestode species was 5(15%) in the two families Dilepididae *Dilepis undula* Schrank,1788; and Anoplocephalidae *Atriotaenia minuta* n. spp. The topographic ultrastructure of the present specimens has documented new clear specific structures, particularly those of taxonomic importance of pigeon helminthes parasite species including the tegument of two cestodes were found to be entirely covered lined by posteriorly directed filamentous microtriches, interspersed with few short blade-like microtriches, cavities and vesicules around genital opening., the arrangement and number of caudal papillae, lateral alae, dentigerous ridges or continuous cuticular plate cover on the inner surface of each lip., the outer cuticular surface of the lips is unwrinkled, one doubled papillae, the amphidial surface is provided with several pores in addition to the presence of numerous small scattered, scale like caudal sexual sessile papillae in the posterior extremity of male and bosses around female anus of the present nematode *Ascaridia columbae* .

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INTRODUCTION

Rock pigeons are very wide distributed in Qena province because it is surrounded by mountains from all sides. They are important components of ecosystem and occupying where people work and live (Sari *et al.,* 2008). Due to scavenging habit the pigeons are at high risk to all type of parasite infections (Ghazi *et al.,* 2002). Patel *et al.* 2000 constitute the birds a major source of infection and transmission of parasites for humans, they can act as reservoir hosts or carriers, forming a source of infection, some of parasites are pathogenic to humans may be of zoonotic importance they are infected by fecal dust from cages or from sites that been contaminated with dry feces, urine and other droppings Marques *et al.,* 2007. Helminthes infection is very common in pigeons, climates factors may explain the wide range and distribution of helminth, these parasites cause severe histological changes in the host, about one hundred helminth species have been recognized in wild and domestic birds can affect the health of willow grouse by causing loss of weight and by weakening the skeleton and host fitness by increasing morbidity and predation risk as well as reducing clutch size, weakening body condition or altering metabolic rates, Bahrami *et al.,* 2015. Dilepididae Railliet and Henry, 1909 are frequent and widely distributed parasites of birds,. Eleven species of them have been found as adults tapeworms infected piscivorous birds from Mexico Scholz *et al.,* 2002 and thirteen species were collected from the intestine of *Columba livia* at Dharmabad, India, by Nanware,et al. 2010.Anoplocephalidae Cholodkovsky, 1902, parasitizes a variety of hosts, including all vertebrate classes. Denegri *et al.,* 1998 Genus Ascarids are the most common parasite found in birds may cause serious and frequently fatal diseases and one of the major causes for the reduction in egg production, reduced growth rate, the infection of nematodes *(Ascaridia galli*) caused in low health condition in chicken as reported by Dahl *et al.,* 2002. Species that infect pasittacine birds include *Ascarida columbae* (shared with pigeons, *A. galli* shared with

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gallinaceous birds and *A. platycerci*, which is restricted thus far to Psittaciformes. Ashour, 1994 who gave a sketchy remark on the general topography of *Ascarida coulumbae* by using scanning electron microscopy. *Ascaridia galli* and *A. columbae* are common nematode parasites reported to infect domesticated as well as wild birds Soulsby, 1982. Kajerova *et al.,* 2004 made a review and a key for Ascaridia from different hosts and differentiated Ascarida species on the bases of spicule length and female tail length. Hayunga, 1991 mentioned that the body surface in helminth plays an important role in integrating the worm's physiology with its microenvironment via nutrient assimilation, regulation of internal chemical pools by selective absorption or secretion mechanisms and chemosensory activity. Cestodes tegument represented a high degree of morphological specialization for performing diverse functions, which include nutrient absorption, digestion, protection, excretion, anchoring and traction for locomotion (Palm *et al.,* 1998). Earlier investigations of tapeworm morphology revealed that the free surface of the tegument is covered with specialized microvilli, thus resembling the brush range of morphologies, border of mammalian enterocytes Read, 1955. These processes have been referred to as microtriches Rothman, 1963, microvilli Beguin, 1966 and tegumental projections Morseth, 1966. Tandon *et al.,* 1997 have shown that the entire surface of the Raillietina echinobothrida's body is covered with fine, dense microtriches that give the parasite a velvet-like, silky aspect.

MATERIALS AND METHODS

A total of 32 birds rock pigeon were respectively collected from Qena from June to October, 2017. Birds were brought to the laboratory dissected and examined for helminth parasites. The intestine was opened longitudinally; specimens were rapidly placed in tap water for few minutes and fixed in hot 4% neutral formalin. The collected worms were cleaned by washing them several times with isotonic saline solution. The worms were then relaxation, fixation, Cestode parasites thus recovered from the small intestine were preserved in 70% ethanol. Later these were pressed lightly between two glass slides and tied up lightly. Later were dehydrated in graded series of alcohol and stained with iron acetocarmine, cleared in clove oil, washed with xylene and mounted permanently in Canada balsam. Nematodes were cleared in lactic acid. Measurements are length by width in millimeters (mm) unless otherwise indicated. Preparation for scanning electron microscopy (sem): Worms were fixed in 3% solution of glutaraldyhide in phosphate buffer PH 7.2 then CO2 critical point dried, The fixed helminthes were dehydrated through multiple bathing with alcohol of 30%, 50%, 80%, 90% and 100%, each stage during 15 minutes, gold coated and examined in JEOL. Measurements are in millimeters unless otherwise indicated.

RESULTS

The present results revealed that, out of 32 rock pigeons dissected, only 11 were infected with helminthes at incidence34.3%. Two species of cestodes 5(15%), belonging to two families (Dilepididae-*Dilepus undula* 3(0.09%) & Anoplocephalidae - *Atriotaenia minuta* n.spp. 2(0.06%) and One species of common nematode *Ascaridia columbae* 8 (25%) were found. All cestode worms are short in size with having 14-27 segments and measures 1.3-2.2 mm in length, white creamy in color.

A-Family Dilepididae Railliet ET Henry, 1909 Dilepis weinland, 1858

***Dilepis undula* (Schrank, 1788)**

Relatively small tapeworm, 1.32–1.85 mm (1.5 mm) long. Strobila wedge shaped total number of proglottids 18- 24 in gravid specimens. Proglottids craspedote, usually wider than long at all developmental stages except gravid, which might be almost as long as wide; occasionally (Figs.5, 7,8a). Scolex somewhat rounded in shape, distinctly marked off from the segments and measures 0.90 x 0.58 in length and breadth. It bears four oval suckers, overlapping to each other in two groups (Fig.1a) and measures 0.35 x 0.20 in length and breadth, with apertures directed anterodorsally and anteroventrally. Scolex well outlined from strobila by a short neck that measure 0.20X0.30 in length and breadth, segmentation commencing almost immediately posterior of the scolex. Rostellum elliptical, 0.55–0.65 long, with thick walls, Rostellar sac extends to level of first one-third of suckers. Rostellum armed having 10-12 hooks, situated in a single row. Guard short, circle, and handle about twice as long as blade. The blade of hooks is smaller than handle, with guard as knob-like structure (Fig.1e). Mature proglottids measure 0.80 x 0.90mm in length and breadth .The unilateral genital pores are situated in the anterior third of the segment margin (Fig.1b), Uterus arising directly from ovary as a lobed sac, gradually enlarging, filing entire segment. Genital ducts usually passing dorsally to osmoregulatory canals. Ovary in medial portion of proglottid, bilobed, connected by wide isthmus; occupying entire width of median field; with the poral lobe being smaller than the aporal one; the two lobes show further lobulations, arranged in a fan like manner. Vitellaria gland compact, postovarian, touching the posterior wall of the segment. Vagina posterior to cirrus pouch, thick-walled, bending posteriad before extending to oval seminal receptacle which lies dorsal and anterior to the ovary, extending from level of aporal end of cirrus sac to Mehlis' gland. Testes numerous, rounded, numbering 6–10 in each mature proglottid, mostly post-ovarian, They are measure 45 to 50 µ in diameter. The vas deferens is a small, coiled tube occupying anterior space between two ovarian lobes and measures 0.65x 0.035 in length and breadth (Figs.1b, d). The cirrus sac is large, pyriform, short cigar shaped, and narrow, situated slightly oblique in proglottid, 0.18 to 0.20 mm length and 0.025 mm in width, overlapping or crossing about its middle poral osmoregulatory canals. Cirrus is slender and long armed with tiny spines (Figs.1 d). Length of fully evaginated cirrus 0. 28–0.29 mm. External seminal vesicle has often irregular shape, internal seminal vesicle enlarging to fill proximal portion of cirrus sac. The gravid proglottids longer than broad, somewhat squarest in shape measures 1.5 x 0.90 µ in lengths and breadth. The uterus occupies the whole of the gravid proglottid, extending laterally over the excretory canals filled with eggs capsules, which measure 20 to 24 × 12 to 15 µ. Egg capsules 65-70 in numbers, having a single egg (Figs.1c).

B. Family: Anoplocephalidae cholodkovsky, 1902
Genus: Atriotaenia Sandground, 1926 (syn. Ersbovia Spasskii, 1951) Atriotaenia sandgroundi Baer, 1935

Atriotaenia minuta n.spp.

Body minute, very small weakly-muscled tapeworm, with few segments (14-20) in gravid specimens, scolex unarmed,

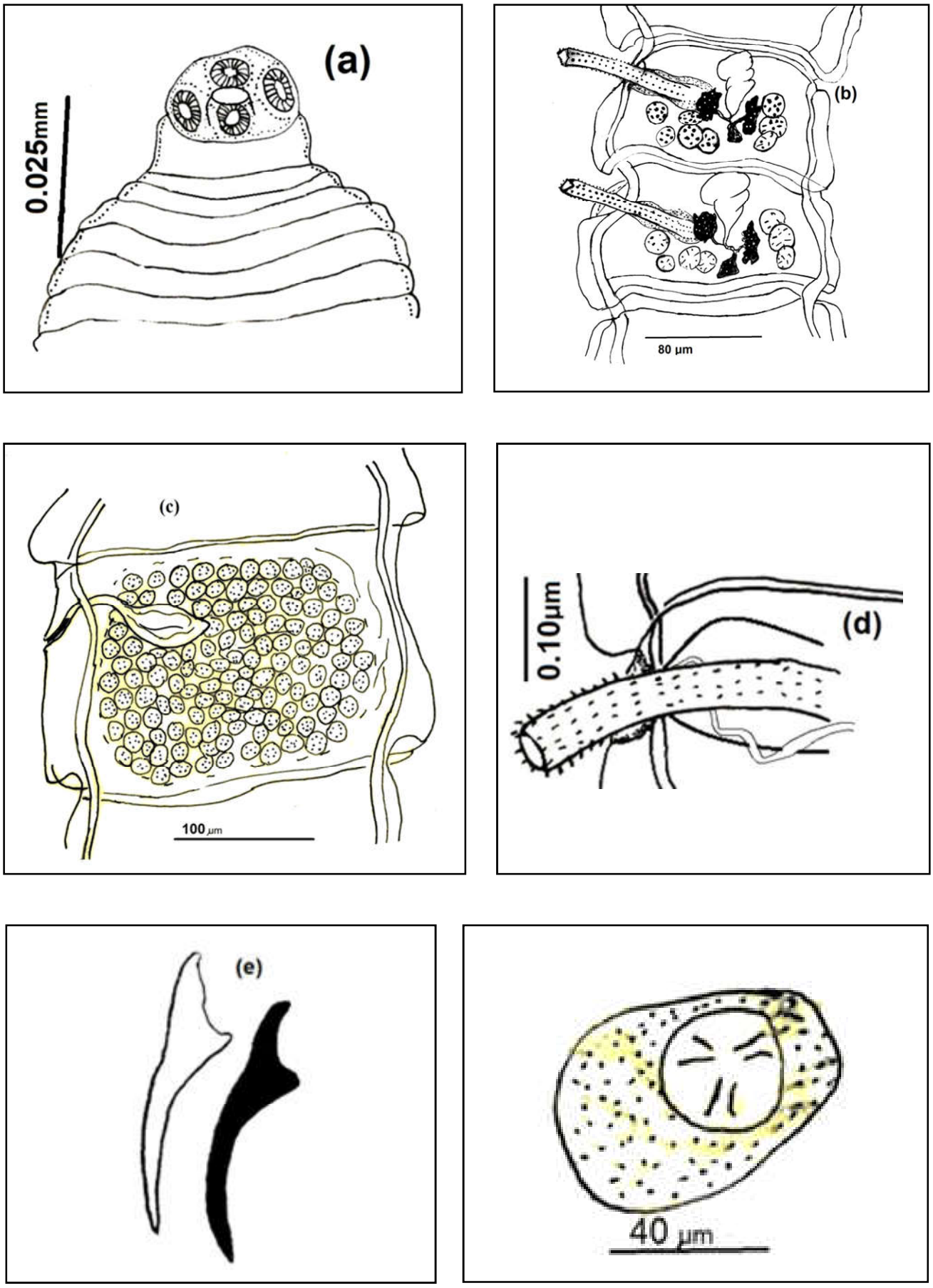

Figure 1. Camera lucida drawing *Dilepis undula* (Schrank, 1788)(a) scolex with short neck showing rostellum with one rows of hammer shaped hooks,(b)mature segment have 7-10 of testes(C)gravid proglottide with egg capsule(e) hooklets and egg(d) Cirrus with tiny spines

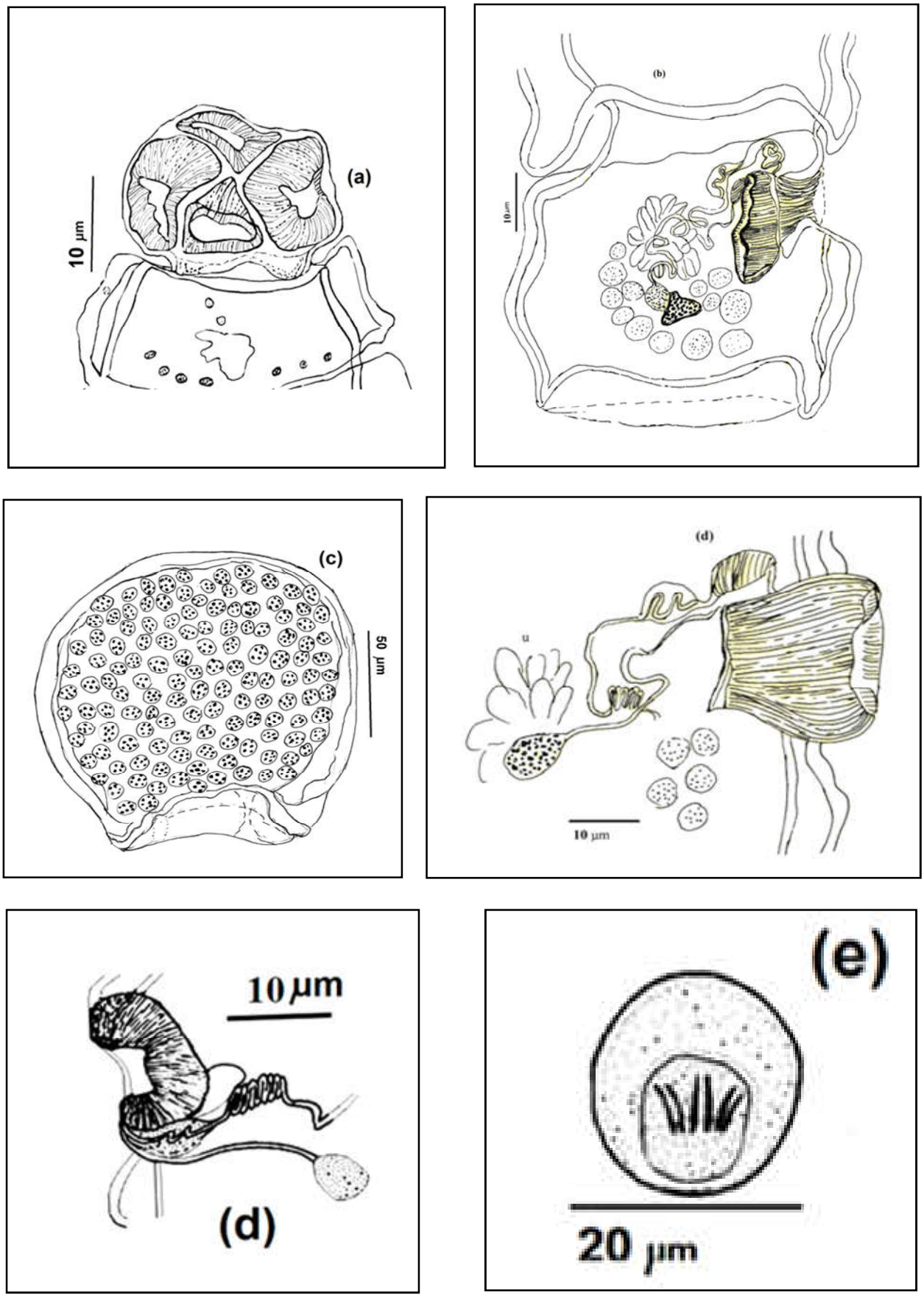

Figure 2. Camera lucida drawing *Atriotaenia minuta* n.spp. (a) scolex with short neck (b)mature segment have numerous of testes, Testes forming compact group posterior to vitellarium and ovary situated in posterior half to two thirds of median field. (C) squaris gravid proglottids, (d) muscular cup atrial cavity (vaginated and envaginated forming ring-shaped fold in front of and behind the base of cirrus.note the receptaculum seminis enlarged tube situated posteriorly to cirrus sac, the vas deferens is a small, coiled tube, Cirrus sac thin-walled, slender, transversely elongated, enters genital atrium posteriorly extends beyond excretory canals. Egg (e) are oval to rounded, present in egg capsules

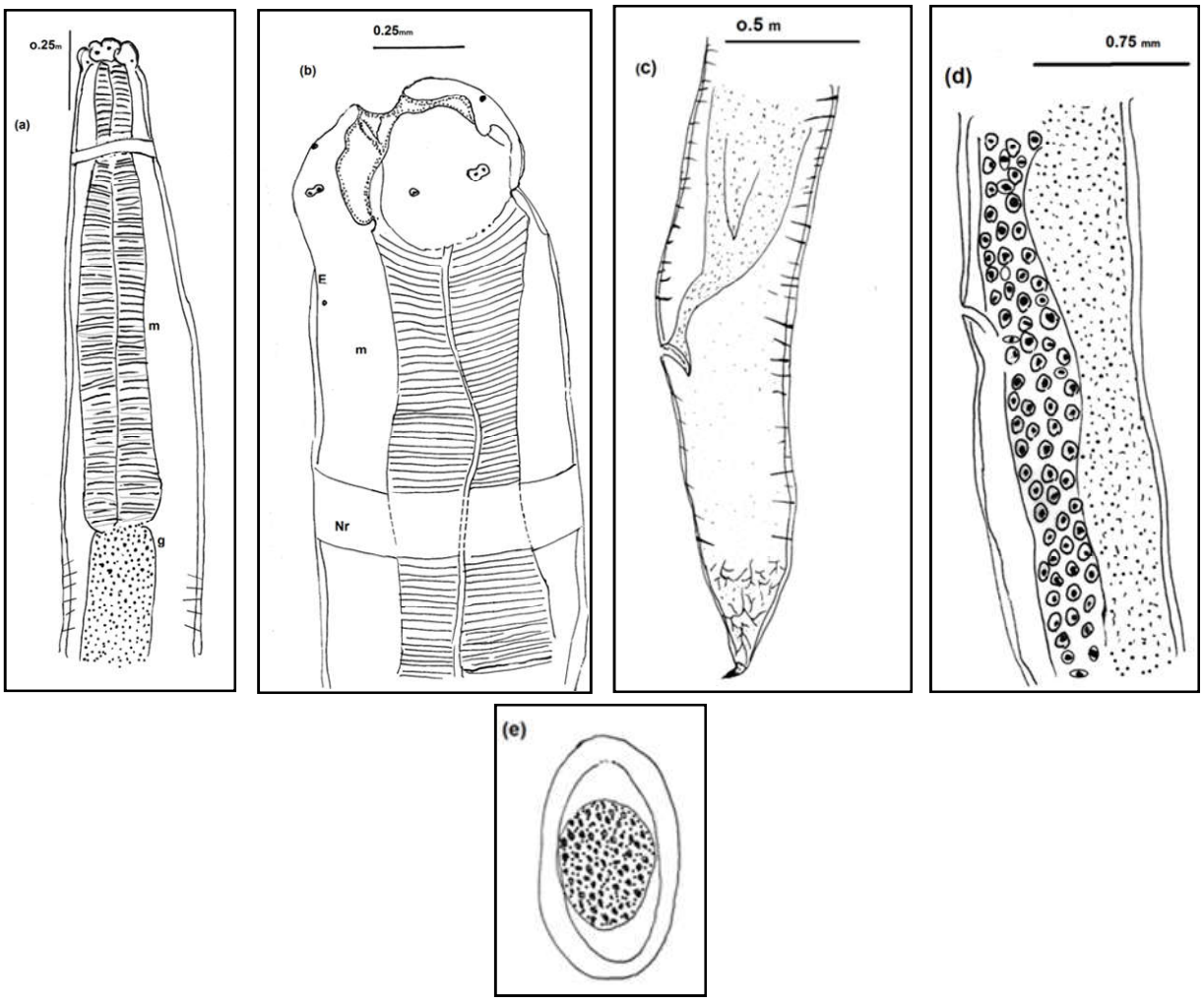

Figure 3. Camera Lucida drawing *A. columbae* anterior extremity of the female(a) showing the oral opening is surrounded by three lips, one dorsal and two subventral, the esophagus divided into an anterior muscular portion (m) and a posterior glandular (g) one; Nerve ring (Nr), two lateral alae commencing at the base of each subventral lip. High magnification of the anterior end (b) showing each lip is lined with dentigerous ridges on the internal rim, and externally studded with eye-like sensory doubled papillae. Teeth form a complete cuticular cover on the inner surface of each lip. The vulval (V) opening (d) is simple; anus is covered with several small cuticular bosses(c). Eggs (e) are oval with smooth shells

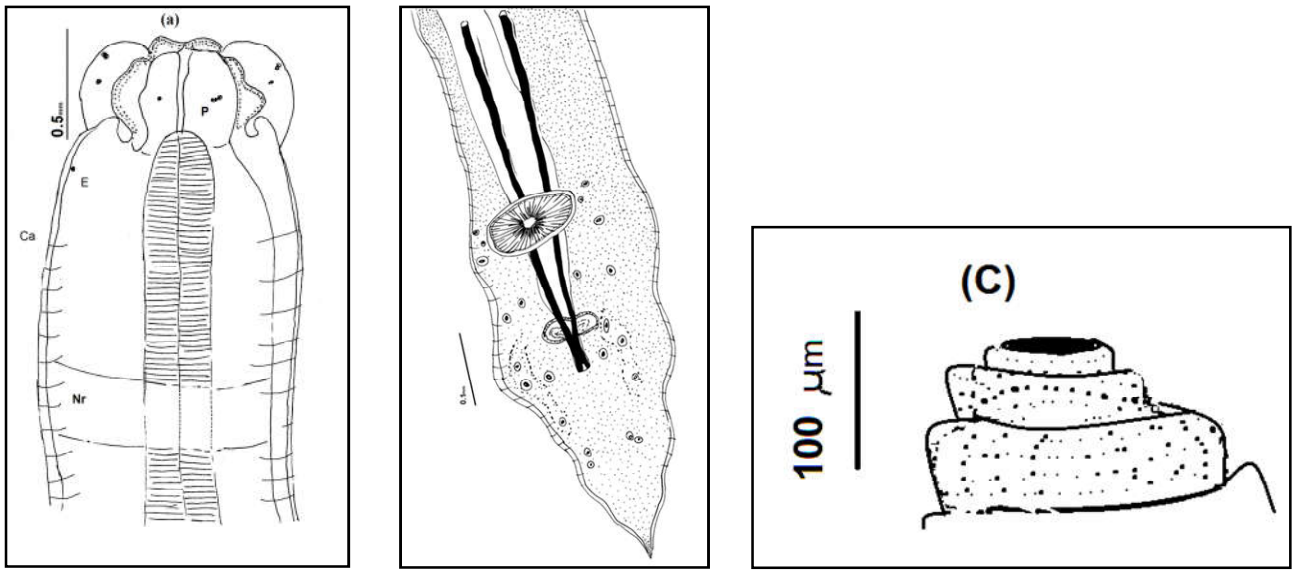

Figure 4. Camera lucida drawing male *A.coulumbae* of anterior and posterior ends (a&b) showing arrangement of cephalic and caudal papillae, (a,b), similar, equal spicules (S) each hollow and alate ,nipple pedunculated papilla(c). Nr=nerve ring, caudal alae (ca), sclerotized circular rim (Cr) and excretory pore (E).note the tail is sharp.- Posterior end (b) of male *A.coulumba* showing elevn pairs cloacal papillae are arranged as follow: 5 precloacal pairs, one paire adcloacal ventral, 2 postcloacal ventral pairs, and 3 postcloacal lateral pairs

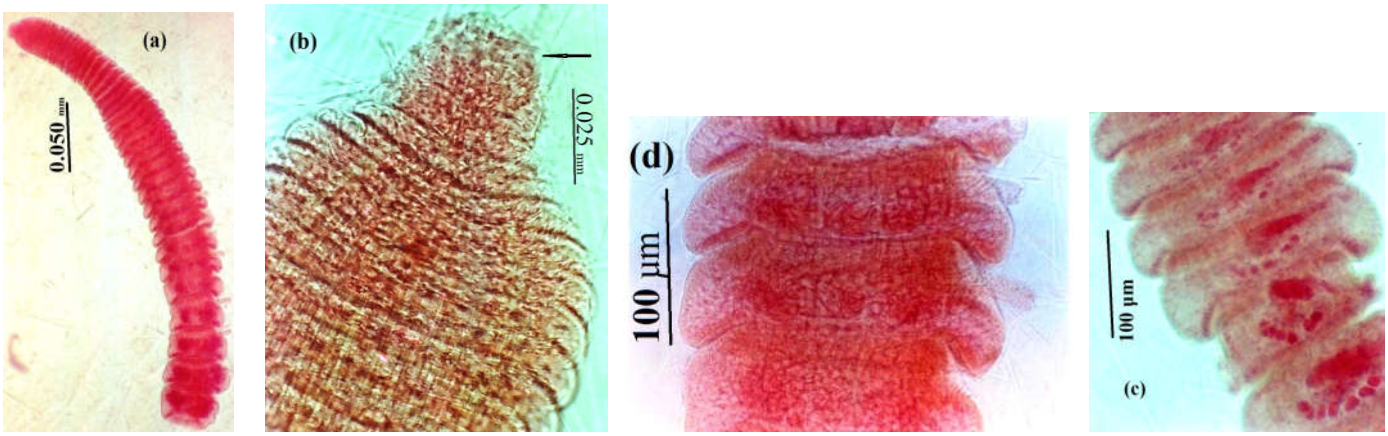

Figure 5. Light microscope photomicrographs of *Dilepus undula* showing (a) whole mount strobila , (b) high magnification of scolex note well outlined from strobila by a short neck. (c & d) mature and gravide proglottides, note the unilateral genital pores, cirrus is slender and long armed with tiny spines

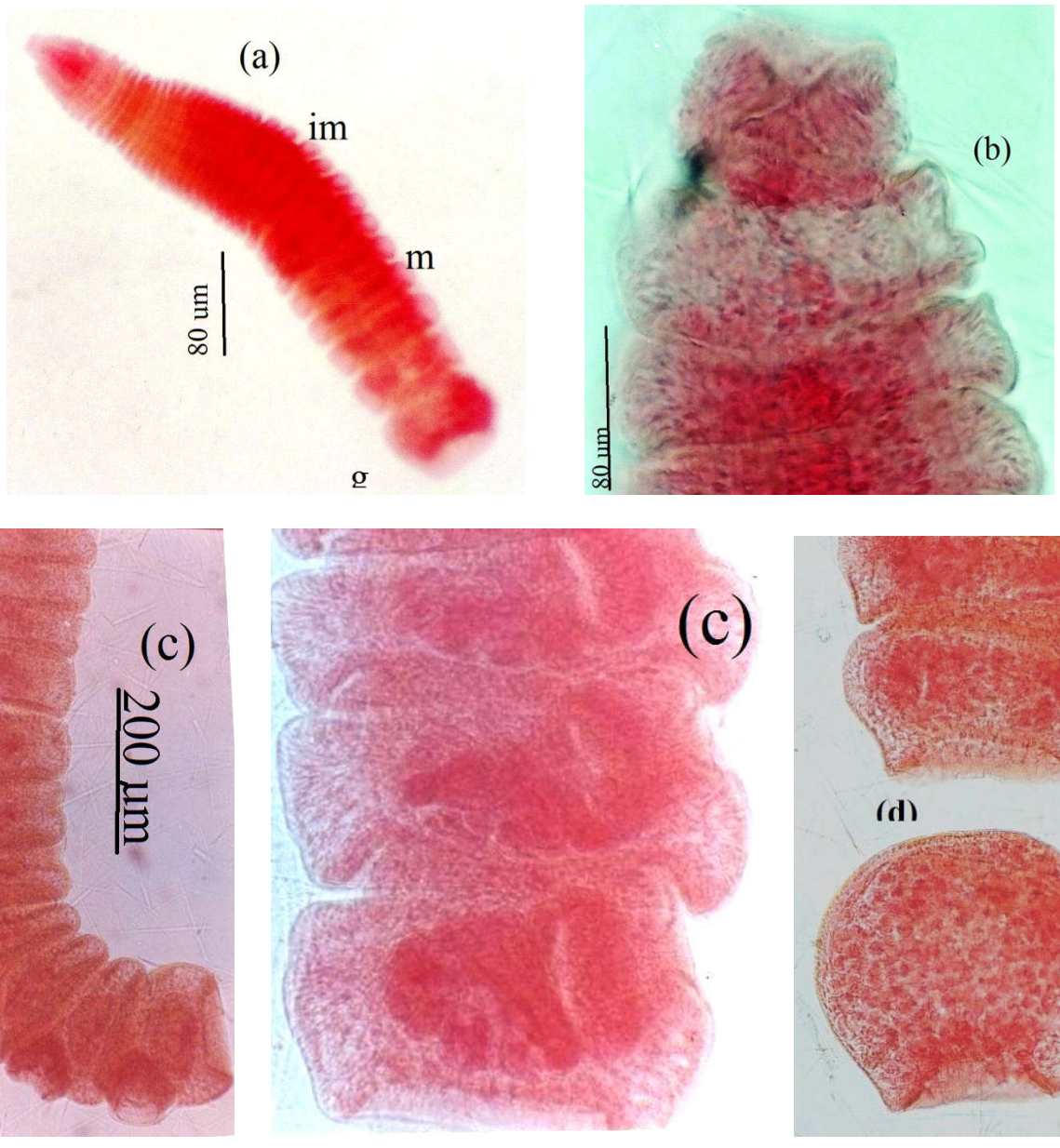

Figure 6. Light photomicrographs *Atriotaenia minuta* n.spp. showing (a) whole mount strobila with weekly few segments, note young segmentss wider than long while mature ones becoming gradualy longer than wide,(b) scolex unarmed, globular, poorly demarcated from strobila, followed by a short shoulder neck, Suckers oval with poorly muscular walls, aspinose,(c) Mature proglottids ,(d) somewhat squarish in shape,gravid proglottides

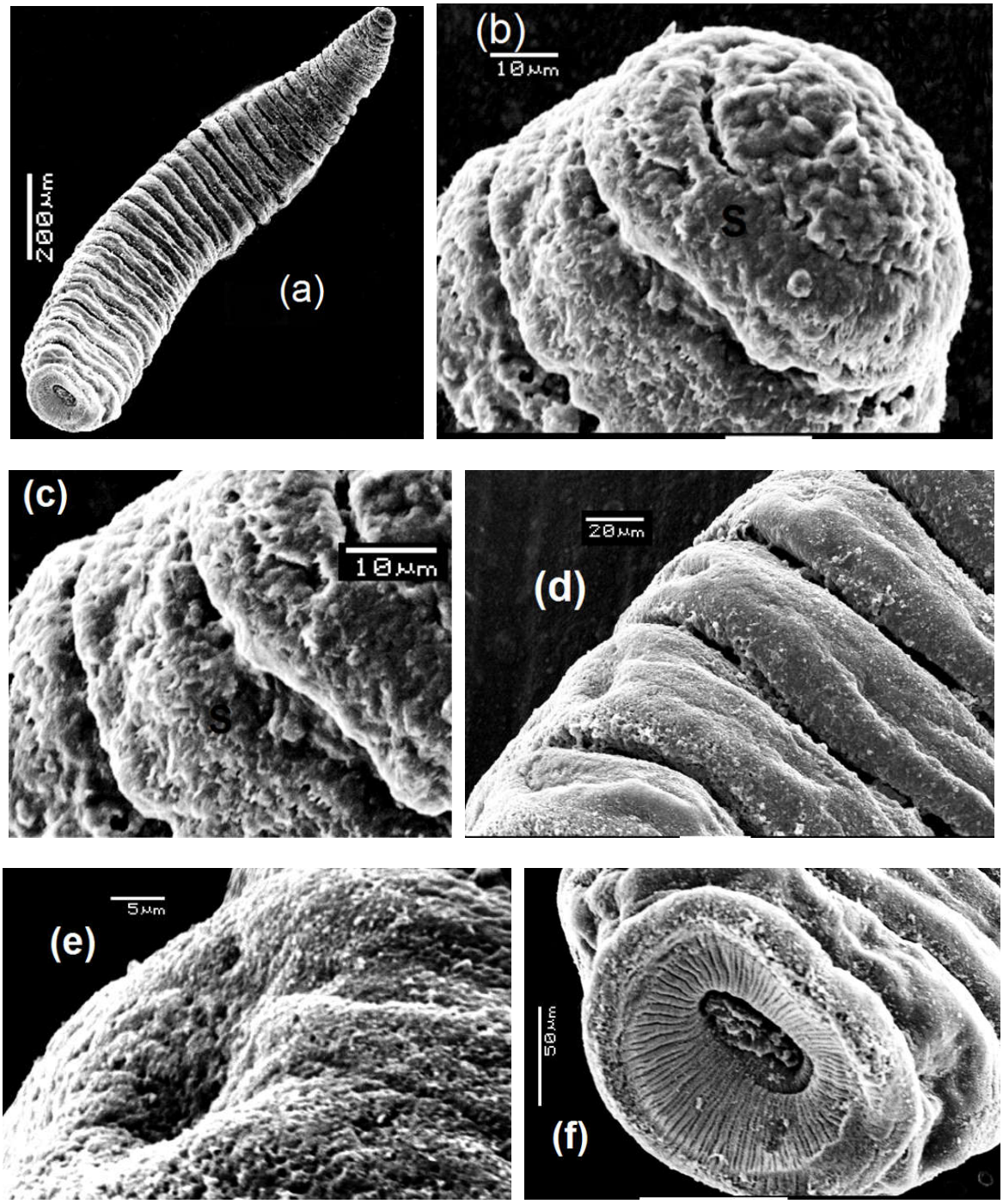

Figure 7. *Dilepus undula* SEM micrographs showing; (a) complete tapeworm without gravide segments, note wider than long at all developmental stages. (b, c, d, e and f).High magnification surface ' tegument are covered with dense microtriches, in addition to ending electron-dense points could be seen on the margins of the suckers(s), genital pores surrounded by numerous small papillae, cavities , vesicles and tufts

globular, poorly demarcated from strobila, followed by a short shoulder neck that measures 0.16 to 0.22 mm in length and 0.35 to 0.40 mm in breadth across the suckers (Figs. 6,9a). Suckers oval with poorly muscular walls, aspinose 0.13-0.17mm in diameter. Immature segments broader than long, but smaller than the mature segments and measures0.55X0.60. Mature proglottids, somewhat squarish in shape and measures 0.62 x 0.71 mm, with envaginated cirrus, atrial wall often forming ring-shaped fold resembling thick finger-like "processes" in front of and behind the base of cirrus. Genital pores, unilateral, situated in anterior third of lateral margin of mature forming appear as cavity muscular cup shaped structure with diameter of 40–45 µ (Figs.2b, 6, 9d). At this stage, orifice of cirrus sac distinct, terminating into closed cavity.

Later on, with partial evagination of cirrus, atrial cavity opens outwards. Genital ducts usually passing dorsally to osmoregulatory canals.Ventral osmoregulatory canals, forming transverse anastomosis along posterior margin of each proglottid. The uterus is a transverse lobulated sac, ephemeral which in ripe segments practically fills the whole segment, extending laterally over the excretory canals developing uterus sac-like, transversely elongate, and situated dorsally to female glands; crossing osmoregulatory canals dorsally to them (Fig.1c). The vitelline gland oval, compact, is to be found below the ovary, its size being0.90X0.065mm. Ovary is lobular its size is 0.310X0.135 mm. median or mostly poral in fully mature segments, arise from ootype, which is bilobed, dumbel shaped and measures 0.14 x 0.05mm in length and breadth.

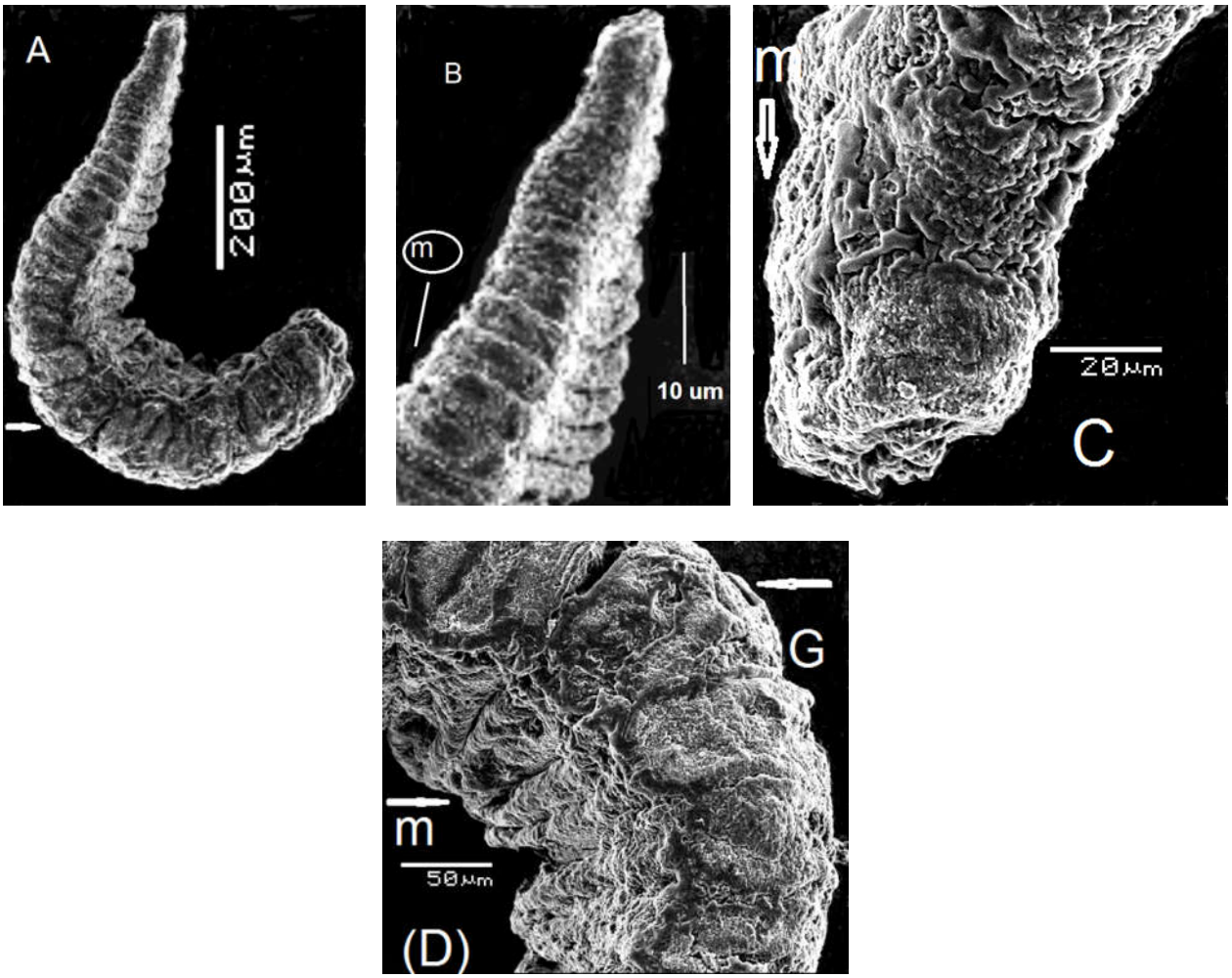

Figure 9. ***Atriotaenia minuta*** **n.spp. SEM micrographs showing; (A) complete tapeworm with few segments, genital pores, unilateral, situated in anterior third forming appear as cavity muscular cup shaped structure, atrial cavity opens outwards. (B) High magnification of anterior part showing scolex unarmed, globular, followed by a short shoulder neck. (C &D) high magnification of atrial cavity and gravid segment showing the tegument was found to be entirely covered lined by microtriches(m), genital pores are surrounded by numerous small spines and papillae, densely packed- on the margins of the suckers could be seen electron-dense points**

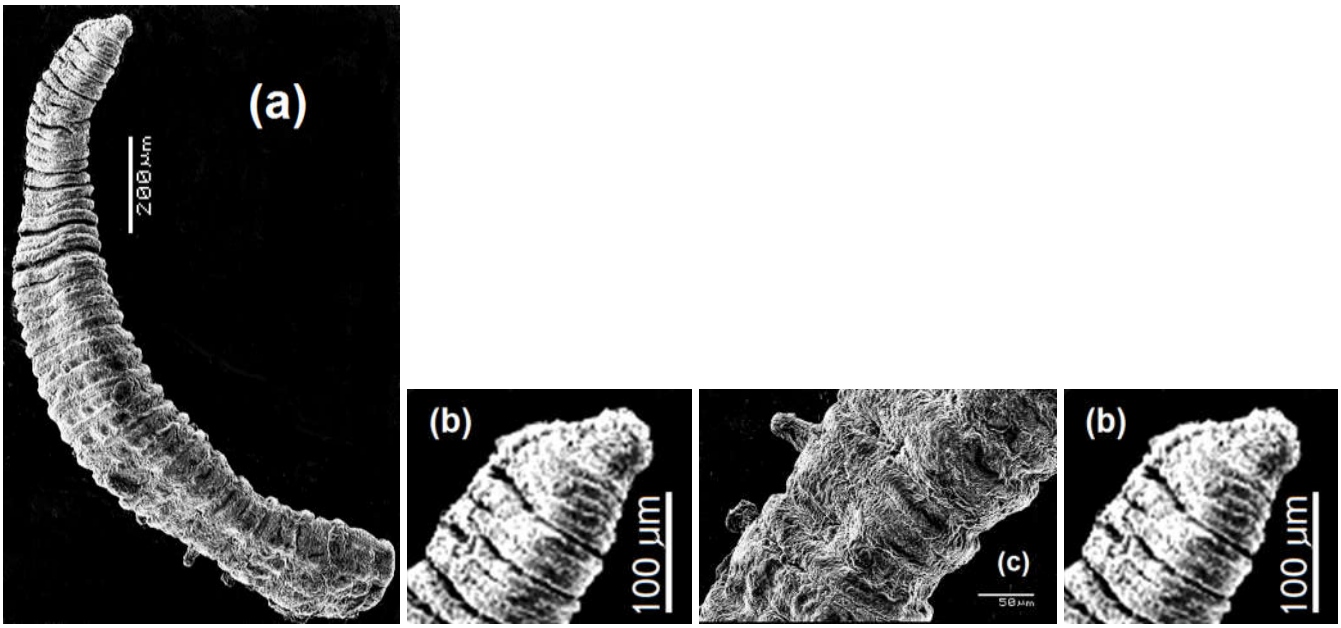

Figure 8. ***Dilepis undula*** **SEM micrographs showing ; (a)complete tapeworm with gravid,(b) scolex with short neck illustrating it bears four suckers and evaginated rostellum, (c) mature segments showing cirrus in genital opening, (d) high magnification of .evaginated cirrus note it slender ,long and armed with tiny spines**

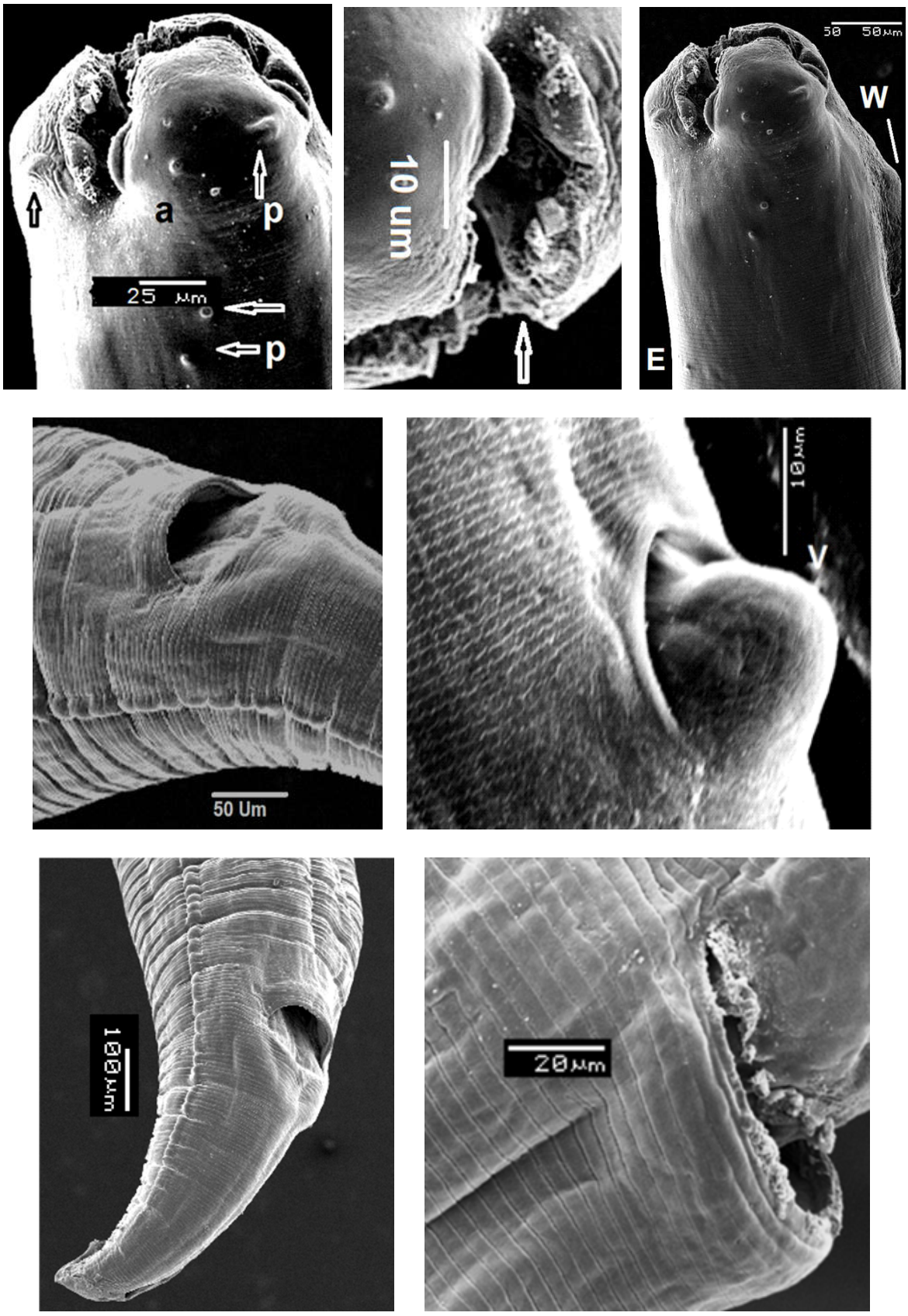

Figure 10. SEM micrographs *A.coulumbae* female showing anterior end with excretory pore (E), three large trilobed lips and two lateral cephalic alae wings (w). The outer cuticular surface of the lips is unwrinkled, the inner surface of each lip is provided with two longitudinal cuticular thickenings or cutting plates. Three large cephalic doubled papillae (p) and 2 amphids (a) are found on outer surface of the lips in addition to 3 small papillae on the base of the subventral lip. high magnification of a protruding vulva (V) is in the anterior part of the body directed forwardly and has elevated lips, cuticle transverse striations (annulations), the anus near the posterior extremity of the body; there are numerous small scattered sessile papillae around the anus. The tail is sharp; The surface of the latter is covered with several small cuticular bosses give it rough appearance

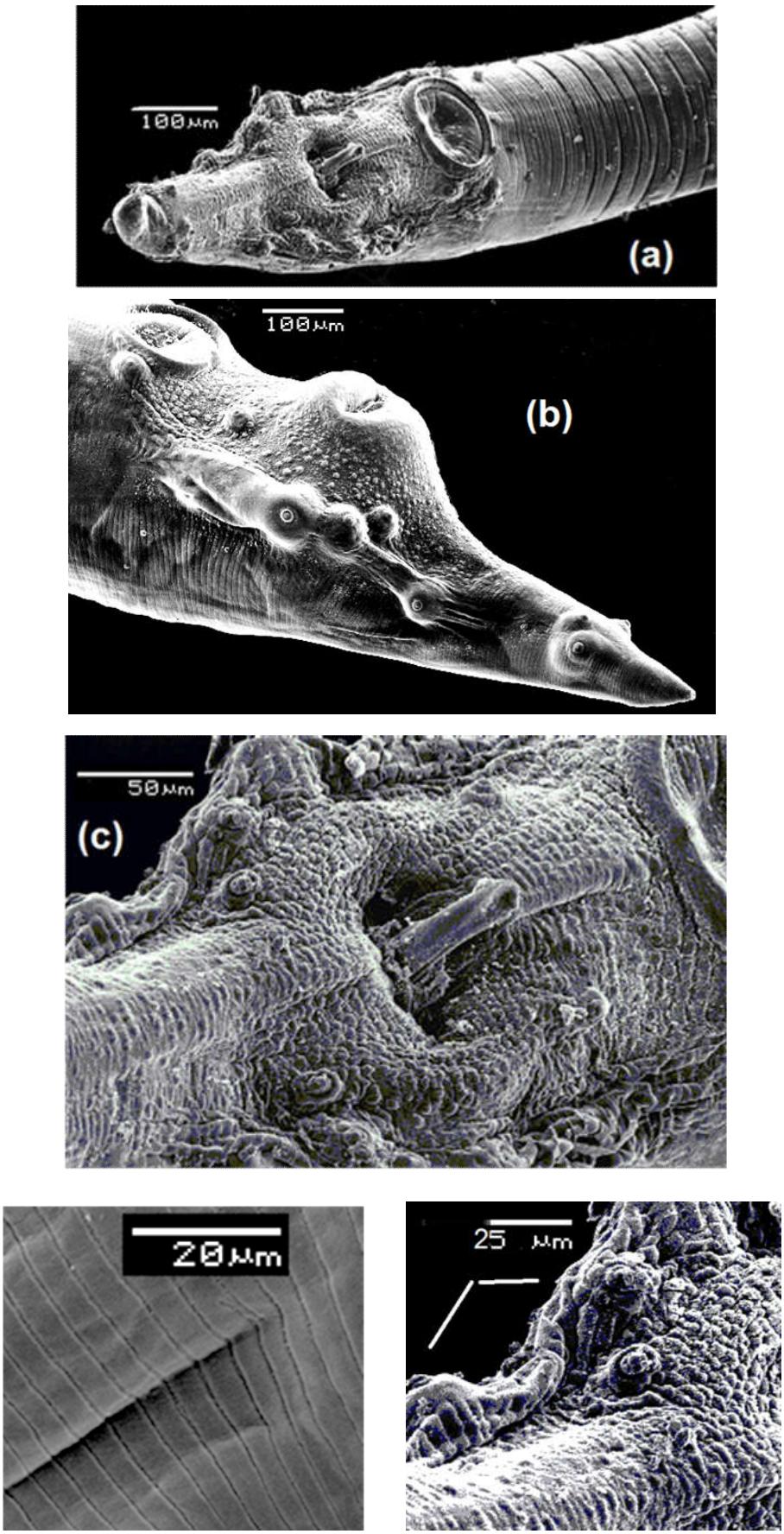

Figure 11. Scanning electromicrographs of male showing the posterior extremity which is slightly inflated forming ill developed caudal alae with normal cloacal protrusion. The preanal ventral sucker is situated a short distance anterior to the cloacal opening, it has ill boundered circular rim. The cloacal opening is situated on the top of a ventral conical protrusion, the cloacal papillae that are arranged in three groups, the pre-ad and postcloacal ones; note numerous irregular sessile sexual cervical papilla like scales. small cuticular vesicules , knobs ,Three pedunculated, ribbon-like, 4 pairs, the tail is sharp. Each of pedunculated papillae is supplemented by a nipple, body surface ornamented with wide cuticular transverse striations (annular)

Vagina posterior to cirrus- sac, opens at base of female atrial canal, Copulative part of vagina funnel-shaped, 30–40 in length, passing into narrow tube situated posterior to cirrus sac. Conductive portion of vagina may form arbitrary curves. The vagina is a thin tube, starts from the genital pore, posterior to cirrus pouch, runs posterior, forms receptaculum seminis and measures 1.2x 0.054 µ in length and breadth (Figs. 2b, 6, 9a, c). The receptaculum seminis enlarged tube situated posteriorly to cirrus sac or may overlap it. It joins to ootype and measures 0.201 x 0.015 in length and breadth. Testis usually situated porally to female genital primordial, clearly visible in proglottid, posterior and lateral to vitelline gland, reaching posterior margin of ovary. The poral and middle testicles lie about in one line and the aporal one may be observed forward and a little laterally, compared to the middle testicle. The vesicula seminalis formed by the vas deference is oval- shaped. Which is a large, coiled tube and measures 0.66x 0.04 in length and breadth.Cirrus sac thick-walled, slender, goes a little beyond the secretory pipe, transversely elongated, enters genital atrium posteriorly extends beyond excretory canals, not reaching midline of proglottids; internal vas deferens coiled within cirrus-sac; cirrus without visible spines. External seminal vesicle elliptical or oval situated dorsally to female glands, near to antiporal osmoregulatory canals. Internal seminal vesicle very long fills up almost entire cirrus-sac, its size being 0.085x0.050 mm. The gravid proglottids are longer than broader and measures 1.2 x 0.95 in breadth and length. Egg capsules are oval to rounded, having a single egg, measures 0.04X0.06 in diameter (Fig. 2c). *Atriotaenia minuta* n.sp. Was first recorded from rock pigeon, captured in Qena.besides some dimensional differences, the main differentiating character's are smaller in size, suckers; presence of a short shoulder neck; fewer testes, fewer segments; and smaller eggs. These differences suggest the proposal of a new species; *Atriotaenia minuta* n.spp .The species name reefer's to small size. Ultrastructural study revealed that the tegument of two cestodes were found to be entirely covered lined by posteriorly directed filamentous microtriches, interspersed with few short blade-like microtriches. In addition to ending electron-dense points could be seen on the margins of the suckers, their cavities and rest of the scolex region. The basal region of the gravid proglottides was interrupted by genital pores surrounded by numerous small papillae, and they are lack of microtriches in this region (Figs. 7, 8, 9).

C.Familia: Ascaridiidae (Travassos, 1919)
Genus:Ascaridia Dujardin, 1845

***Ascaridia columbae* linstow, 1903**

Adult worms are semitransparent; males are smaller than females and the oral opening has prominent three large globular lips with dentigerous ridges, equal as dimension, three large cephalic doubled papillae and 2amphids are found on outer surface of each lip in addition to 3 small papillae on the base of the subventral lip. Wide lateral alae extend along the whole length except the two extremities of the worm, the maximum width of the lateral alae is found in the cervical region where distinct cervical alae are found but disappear slightly anterior to the preanal sucker. The cuticula surface is transversal ridged (striate) excepting the lips cuticula, there is no significant sexual dimorphism in the lips. The alimentary canal not simple esophagus divided into an anterior muscular portion and a posterior glandular one; the latter being sigmoid in shape and clearly marked off from the muscular portion. Nerve ring (Nr) located near the junction of pharynx and muscular esophagus at the distance of 0.3mm from the head end (Fig.4). The female measures 6-10mm in length mean 8mm and 0.4- 0.6mm. In width, mean (0.5mm).the esophagus measures 0.8-1 mm long. Eggs are oval, with smooth shells, and measure 60–70 by 40–60 µm. Vulva present in the posterior end of the anterior third of the body has elevated lips and the tail is sharp, with a lack of cuticular formations, having the anus near the posterior extremity. There are numerous small sessile papillae around the anus (Fig.3). The male measures 5-7mm in length, the esophagus measures 0.4-0.6mm in length, mean 0.5mm. The cloacal opening is situated on the top of a ventral conical protrusion. The surface of the latter is covered with several small cuticular bosses (Fig.11b).
The male has a straight and coiled, thinned caudal extremity being laterally winged by two allae well-marked, and sustained by 11 paires of caudal papillae. Spicules are nearly unequal and dissimilar, each hollow and alate with blunt ends1.4-1.8 µm in length (Fig.11). Scanning electron microscopy of adult *A. columbae* showed the presence of two wide cephalic alae, three globular lips the inner surface of each is covered with a thick and continuous cuticular plate or tooth, an outer shrunken cuticular surface. The cuticular ventral surface of the male tail is covered with small cuticular knobs or vesicles. Three paired cephalic papillae and two amphids are found on the outer surface of the lips. The amphidial surface is provided with several pores. Ultrastructure study recorded that eleven cloacal papillae are found on the cloacal region and are arranged as follow: five precloacal pairs, one adcloacal ventral pairs, two postcloacal ventral pairs, and three postcloacal lateral pairs. Three pairs of them pedunculated, ribbon-like, shorted laterally cloacal papillae, the preanal sucker is rounded in outline with thick circular sclerotized rim being surrounded by a chitinous inner and it measures an approximate 70 µm diameter. The cloacal opening was situated on the top of a ventral conical protrusion. On either side of the clocal and preclocal opening are a series of minute bulges. Spicules show that each is hollow and alate, well developed, sub-equal, covered in specular sheath, and protruding out at anal opening. The alae are curved ventrally, and the tail is sharp (Figs.10, 11). High magnification revealed that each of pedunculated papilla supplemented by a nipple (fig.11c). and the high of papillae ranged from 6-8um and width 2-4µm while the distance between them ranged from 12-18µm.In addition to the cloacal ventral surface of the male tail is covered with small numerous scattered cuticular sexual knobs or papillae like scales give a rough appearance to the posterior extremity of the male(Figs.11c. and d.). The cuticular surface of the body is transversely striated 0.015 mm wide. Annuli are transverse concentric rings and were divided further into parallel subannuli. Cuticular annular and transverse striae occurring along the entire body are distinctly seen posterior to the lips; it is highly corrugated towards the posterior end giving the body a general rough appearance. It should be noted that elevated vagina the conical tail with a suddenly narrowed distal part with terminal spikes and the present scattered sessile papillae around the anus in *Ascarida coulumbae* are described for the first time.

DISCUSSION

The infection rate with helminth parasites in the present study was (34.3%.) which is smaller than that reported by Ashenafi and Eshetu, 2004 where their recorded rates were cestode and nematode of (86.32% and (75.79%) respectively, whereas

Heyradin Hussen *et al.,* 2012, also reported the prevalence of cestode and nematode 83.00%, which is so far higher than the result of the present study, the difference between the present study and the previous works may be due to variation in localities. Most pigeons were infected with cestodes. The present investigation demonstrated that the prevalence with cestodes was (15%). These results may be due to scavenging habit of pigeons and other climatic geographical factors. The prevalence rate of *Ascaridia columbae* was (0.7%) this finding is more less to the report of Baboolal *et al.,* 2012 who reported the prevalence (5.8%) in Trinidad.Whereas the prevalence rate of 25.63 and % 35, 38%.from Kenya and Egypt in domestic pigeons respectively. Kaingu *et al.,* 2010 and Gad 1978. This result strongly suggested that Ascarida species is the most common and important helminth infection of birds. The measurement of the worms in the present material agree with those given in previous descriptions except that the female worms was found to be smaller, being 6-10 long as compared to 15- 23 mm given by Ashour (1994). When compared with the known species of genus *Dilepis* Weinland, 1858 described from different avian hosts, the present specimens shows a large similarity of characters with *D. undula* (Schrank, 1788). This species has also been described several times, giving variation in the number and size of rostellar hooks, number of testes and length of strobili. However, the present measurements come in the range of those described by various authors. In view of these measurements and other similarities as described above, the present cestode specimens are assigned to *D. undula* Schrank, 1788 .It is recorded for the first time in Qena. *Dilepus undula* under discussion differs from Mattrick, (1957) which is having the diameter of scolex, 0.45-63mm diameter. The hooks in the two rows on the rostrum differ in size and shape. Rostellar hooks48-64 hooks, the number of segments in complete worm there are 33 immature, 30 mature and 20 gravid segments. The number of testes 70-75, length of cirrus sac 0.215 to 0. 0.223. The genus *Choanotaenia* Raillet, 1896, is similar to the present genus *Atriotaenia* Sandground, 1926 in having unarmed scolex, unilateral genital pores, and a somewhat similar arrangement of the genital organs. However, the details of the cirrus sac and muscular cup shaped of the genital pore differ greatly; the testes are arranged in a row in the posterior part of the segment, and the form of the ovary. The more numerous segments of *Choanotaenia* are much longer, with a corresponding arrangement of the genital organs, where in the present genus *Atriotaenia*, body minute, small weakly-muscled tapeworm, with few segments. According to Smyth and McManus, 1989, the delicate microtriches, which serve as the surface amplifying structures, resemble functionally the intestinal mucosa of higher animals. These investigators referred to these amplified microtriches in the surface layer as brush-border. Smyth, 1969 suggested that microtriches aid to resisting the intestinal peristaltic currents and in maintaining parasite's position in its host. Also, the thin microtriches found mostly in the sub-scolex region may probably represent sites of increased absorptive and secretory activity. In the present ultrastructural study revealed that proglottids are entirely covered with microvilli hair-like 'microtriches'these microtriches are the absorptive structures for feeding. The single pointed filiform spines most probably aid in their migration throughout the intestinal mucosa this coincides with the findings observed by Pinto et al 1991. In *Atriotaenia minuta* n. sp. the presence of uneven depressions covering the outer margin of the tegument and cup like maculated sucker could help the parasite to be strongly attached to the host intestinal mucosa or perhaps in facilitating the process of feeding and sexual crossing especially since it does not have strong scolex and lacking to muscular suckers. Lumsden and Murphy, 1980 proposed that the tapeworm tegument might be an example of an “epidermal” tissue exerting a modulating effect on muscle tissue. However, the functional specialization of the cestode tegument for sensory reception is not well understood (Palm et al, 1998). Nevertheless, several different functions have been attributed to ciliated receptors, such as chemoreception Allison, 1980, osmoregulation Hess and Guggenheim, 1977 and mechanoreceptor (Andersen, 1975). Furthermore, Ba *et al.,* 1995 considers that a scale-like thorn on the rostrum of Raillietina species represents a new diagnostic criterion for Davaineidae.

The present description of *A. columbae* from Qena was agreed with the original species that described by Yamaguti 1961 in Egypt, similar to given by Ramadan and Najwah (1992), Dehlawi, 2007 and Banaja *et al.,* 2013 and Ashour (1994) in Egypt. Banaja et al, 2013 by his microscopical study in adult of *A. columbae* Eltaif showed the presence of two wide cephalic alae, three globular lips the inner surface of each is covered with two triangular teeth. Cram 1937 separated *A. galli* from *A. lineate* on the basis of the absence of the subterminal ventral papillae in *A. galli*. These subterrminal ventral papillae are quite distinct in the present nematode. The number and distribution of caudal anal papillae and shape of spicules is a feature that can be useful in diagnostic and systematic works, as it is likely that these features, because of their apparent importance in the reproduction process, tend to conserved Fagerholm, 1988. Ezzat and tadros 1960 described variations in the caudal papillae of Ascarida male from Egypt, and reported the number of papillae to be 10 pairs in *A.galli*, Ashoure 1994 found to be only 9 pairs (with 3 pairs precloacals) and 15 pairs in *A.columbae* (with 8 precloacals). In the present work the caudal papillae of the male were found to be only eleven pairs. Chabaud and Petter 1961 showed the presence of 10 caudal papillae in the male of *Ascarida perspicillum*, four of them are precloacal,while in the present worm are only 3 precloacal pairs of caudal papillae. The surface of the cloacal area in *A. columba*e female is ornamented with small cuticular bosses; the presence of 3 small papillae at the base of the subventral lip of *A. columbae* may represent the process of migration of the somatic papillae to the cephalic region reported by Chitwood and Weher, 1934. wright 1975 suggested from his studies of *Niippostrongylus brasiliensis*, that the sensory organs he identifies as mechanoreceptors, embedded in the inflated cuticle vesicle, may act as stretch receptors, where the pressure on any point of the inflated cuticle may initiate a stimulus which is received by these sense organs and may enable stimuli to be received from any part of the cephalic region in contact with the environment. The other cephalic sense organs which open to the environment via slits pores in the cuticle are more likely to respond to a chemical rather than a mechanical stimulus. The amphids, although primarily considered to be chemosensory structures, may also have an additional function as a photoreceptor. The amphids, although primarily considered to be chemosensory structures, may also have an additional function as a photoreceptor. Amphids are the main chemosensory organs of nematodes and are accrued to play important roles in host finding behavior and the control of development. Ashton, 1996. The neurons found in the amphidial channel are responsible for a wide range of sensory functions such as detecting aqueous chemo attractants,

repellants and volatile odorants; thermo reception, and chemotaxis during larval development to recognize suitable hosts (Ashton, 1999). In some sites, two successive transverse annuli might be fused at a short distance from lateral toward the middle of the cuticle with subsequent increasing the subannuli numbers and the width. The present work has added new characteristics to be used in differentiation of the present species .This includes the rough appearance of posterior extremity of the worm, the cephalic alae which is wide in *A.columbae* compared to the narrow one of *A.galli*, the cuticular vesicles covering the ventral surface of the male tail of *A.galli* and its absence in *A.columbae*, the structure of the lips which are robust and globular in *A.columbae* while in *A.galli* lips are covered with a rather shrunken cuticle, and the teeth are triangular or spoon- like cuticular thickening covering the inner surface of each lip, while in *A.galli* teeth form a complete cuticular cover on the inner surface of each lip.

Conclusion

The present study deals with rediscreption of *Dilepus undula*, *Ascaridae columbae* and a new species of the tape worm genus *Atriotaenia* detected from the small intestine of the common wild rock pigeon *Columba livia* in Qena.

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