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## On the synonymy of *Pleurogenoides odeningii* Kharoo & Khatri, 2008 (*Pleurogeninae* : *Lecithodendriidae* : *Trematoda*) with *Pleurogenoides gastroporus* Luhe, 1901.

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**Abstract:** Kharoo & Khatri (2008)<sup>1</sup> reported a new species of a trematode *P.odeningii* from an unidentified snake which appeared in *Natl. Jour. Life Sciences* Vol. 5(8): 97 – 102. They compared the said trematode with reptilian trematodes *P.tener* (Looss, 1899)<sup>2</sup> Travassos, 1921<sup>3</sup> from *Chamaeleo basilicus* in Egypt and *P.medians* (Olsson, 1876)<sup>4</sup> Travassos, 1921<sup>3</sup> from *Camaeleo chamaeleon* in Tunisia. They also compared their trematode with amphibian trematodes like *P.orientalis* Srivastava (1934)<sup>5</sup> and *P.sitapurii* Srivastava (1934)<sup>5</sup> but they failed to compare their worm with other existing species of *Pleurogenoides* such as (i) *P.gastroporus* Luhe (1901)<sup>6</sup> (ii) *P.freyccineti* Johnston (1912)<sup>7</sup> (iii) *P.japonicus* Yamaguti (1936)<sup>8</sup> Kaw, 1943<sup>9</sup> – Syn. *Pleurogenes* (iv) *P.compactus* Shtrom (1940)<sup>10</sup> (v) *P.bufonis* Kaw (1943)<sup>9</sup> (vi) *P.hashimi* Rohde (1963)<sup>11</sup> Syn. *P.taylori* according to Fischthal & Kuntz (1967)<sup>12</sup> (vii) *P.petropedatis* William et Coker (1967)<sup>13</sup> (viii) *P.infranensis* Dollfus (1958)<sup>14</sup> (ix) *P.solus* Johnston (1912)<sup>7</sup> Travassos, 1930<sup>15</sup> (x) *P.sphaericus* (Klein, 1905)<sup>16</sup>, Travassos, 1921<sup>3</sup> (xi) *P.stromi* Travassos (1930)<sup>15</sup> (xii) *P.stromi punicus* Balozet et Callot (1938)<sup>17</sup> (xiii) *P.tacapensis* (Sonsino, 1894)<sup>18</sup> Syn. *Sonsinotrema* according to Balozet et Callot (1938)<sup>17</sup> (xiv) *P.taylori* Tubangui, 128<sup>19</sup> Travassos, 1930<sup>15</sup>.

The authors of *P.odeningii* also failed to compare their specimens with *P.arrectum* Dujardin (1845),<sup>20</sup> *P.minus* Pigulevsky (1931)<sup>21</sup> which have been considered synonym of *P.medians* by Sah (1999)<sup>22</sup> and *P.pabdal* Pande (1937).<sup>23</sup>

The present authors have provided a comparative chart of *P.gastroporus* species described by various authors from time to time & have also compared *P.odeningii* with other species of *Pleurogenoides*. Majority of the characters of *P.odeningii* kharoo & Khatri (2008)<sup>1</sup> fall within the measurement range of *P.gastroporus* Luhe (1901)<sup>6</sup> and thus have synonymised *P.odeningii* with *P.gastroporus*.

*P.gastroporus* var *equalis* Mehra & Negi (1928)<sup>24</sup> Singh (1954)<sup>25</sup>; *Pleurogenes orientalis* Srivastava (1934)<sup>5</sup> & *Pleurogenes sawanensis* Gupta and Agarwal (1968)<sup>26</sup> are synonyms of *P.gastroporus* according to present authors.

**Key words:** *Pleurogenoides ( odeningii, gastroporus) synonyms.*

### INTRODUCTION

*Pleurogenoides* Travassos (1921)<sup>3</sup> is one of the genera of the subfamily *Pleurogeninae* Travassos (1921)<sup>3</sup> Yamaguti, 1971<sup>27</sup> under the family *Lecithodendriidae* (Luhe, 1901)<sup>6</sup> Odhner, 1910.<sup>28</sup> Though the existence of the genus has been suppressed by Mehra et Negi (1928),<sup>24</sup>

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Srivastava (1934),<sup>5</sup> Gupta (1954),<sup>29</sup> Gupta & Agarwal (1966)<sup>26</sup> yet Tubangui (1928),<sup>19</sup> Fuhrmann (1928),<sup>30</sup> Travassos (1930, 1931)<sup>15</sup>, Krull (1933),<sup>31</sup> Macy (1936),<sup>32</sup> Kaw (1943),<sup>9</sup> Yamaguti (1958 and 1971),<sup>33,27</sup> Varma (1982)<sup>34</sup> & many others hold the genus valid.

Mehra et Negi (1928),<sup>24</sup> Srivastava (1934),<sup>5</sup> Gupta (1954)<sup>29</sup> Gupta & agarwal (1966)<sup>26</sup> believed in the existence of the genus *Pleurogenes* Looss (1896)<sup>35</sup> syn. *Tellogenella* Mehra et Negi (1928).<sup>24</sup> Present authors believe in the existence of the genus *Pleurogenes* Looss

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(1896).<sup>35</sup> The differences between *Pleurogenes* & *Pleurogenoides* Travassos (1921)<sup>3</sup> is shown in table I.

The proposition of the genus *Pleurogenoides* under (*Pleurogeninae*) is based upon the relative length of the intestinal caeca. In *Pleurogenoides* the intestinal caeca are short never extending behind ventral sucker but in *Pleurogenes* the intestinal caeca is long which extends well into hind body behind ventral sucker.

Kaw (1943)<sup>9</sup> pointed that the position of testes in

*Pleurogenoides* is always acetabular or pre acetabular besides the short caeca whereas in *Pleurogenes* the testes are post acetabular. Varma (1982)<sup>34</sup> supported Kaw (1943)<sup>9</sup> & holds that “the genital organs in two groups of parasitic worms must be given taxonomic importance” & thus held *Pleurogenoides* & *Pleurogenes* separate genera.

Kaw (1943)<sup>9</sup> vide his key held following *Pleurogenoides* species valid

(1) *P.sphaericus* (Klein, 1905)<sup>16</sup> Travassos, 1921<sup>3</sup>

**Table I. Comparative chart showing differences between *Pleurogenes* Looss, (1896)<sup>35</sup> and *Pleurogenoides* Travassos (1921).<sup>3</sup>**

S.N.	Parameters	<i>Pleurogenes</i>	<i>Pleurogenoides</i>
1	Body	Elliptical to oval spinulate	Oval to elleptical, spinulate
2	Acetabulum	Comparatively small in anterior half of body	Rather small or of medium size at or near mid body
3	Oral sucker	Terminal or subterminal usually larger than acetabulum & rarely ( <i>P.metalensis</i> ) equal to it in size	Moderately large
4	Oesophagus	Short	Short or of moderate length
5	Pharynx	Small	Small or large
6	Caeca	Extending well into the hind body	Terminate anterior to acetabulum
7	Testes	Symmetrical, post acetabular or near posterior extremity	Symmetrical extra or post caecal in pre-acetabular or acetabular zone.
8	Cirrus pouch	Claviform, containing winding seminal vesicle well developed prostatic complex & protrusible cirrus	Clavate or retort shaped large, crossing left caecum ventrally, seminal vesicle tubular winding, prostatic complete well developed.
9	Genital pore	Marginal between two suckers	On left body margin at the level of oral sucker pharynx or oesophagus
10	Ovary	Ventral, medial or lateral to right caecum in acetabular zone	Submedian usually pre acetabular.
11	Receptaculum seminis	--	Present
12	Uterine coils	Occupy most of the hind body	Winding chiefly in hind body
13	Meteraterim	Well differentiated	--
14	Vitellaria	Bunch like in shoulder region	Grape like bunches in neck or shoulder region
15	Excretory vesicle	With comparatively long or short furcae	V-shaped arms reaching as far as or to near level of acetabulum
16	Parasites of	Amphibians	Parasites of Anura & chameleons

(2) *P.solus* (Johnston, 1912)<sup>7</sup> Travassos, 1930<sup>15</sup> (3) *P.tener* (Looss, 1896)<sup>35</sup> Travassos, 1921<sup>3</sup> (4) *P.sitapuri* (Srivastava, 1934)<sup>5</sup> Kaw, 1943<sup>9</sup> (5) *P.pabdai* Pande (1937)<sup>23</sup> (6) *P.minus* Pigulevesky (1931)<sup>36</sup> (7) *Pjaponicus* (Yamaguti, 1936)<sup>8</sup> (8) Kaw, 1943<sup>9</sup> (9) *P.medians* (Olsson, 1876)<sup>4</sup> Travassos, 1921<sup>3</sup> (10) *P.freycineti* Johnston 1912<sup>7</sup> (11) *P.arcanum* Nickerson (1900)<sup>37</sup> (12) *P.taylori*

(Tubangui, 1928)<sup>19</sup> Travassos, 1930<sup>15</sup> (13) *P.gastroporus* (Luhe, 1901)<sup>6</sup> Travassos, 1921<sup>3</sup> (14) *P.stromi* Travassos (1930).<sup>15</sup>

Yamaguti (1971)<sup>27</sup> held following species under *Pleurogenoides* valid: (1) *P.tener* (Looss, 1898)<sup>2</sup>; Travassos (1921)<sup>3</sup> (2) *P.bufonis* Kaw (1943)<sup>9</sup> (3) *P.calloti* (Dollfus, 1951),<sup>39</sup> Yamaguti, (1958)<sup>14</sup> (4) *P.compactus*

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Shtrom ,1940<sup>10</sup> (5) *P.freyccineti* (Johnston, 1912)<sup>7</sup> (6) *P.gastroporus* (Luhe, 1901)<sup>6</sup> Travassos, 1921<sup>3</sup> (7) *P.hashimi* Rohde, 1963<sup>11</sup> (8) *P.infranensis* Dollfus (1958)<sup>14</sup> (9) *P.japonicus* (Yamaguti, 1936),<sup>8</sup> Kaw, 1943<sup>9</sup> (10) *P.medians*\* (Olsson, 1876)<sup>4</sup> Travassos, 1921<sup>3</sup> (11) *P.medians* var *equalis* Mehra et Negi (1928)<sup>24</sup> (12) *P.petropedatis* Williams et Coker (1967)<sup>13</sup> (13) *P.sitapuri*\* (Srivastava, 1934),<sup>5</sup> Kaw, 1943<sup>9</sup> (14) *P.solus* (Johnston, 1912)<sup>7</sup> Travassos, 1930<sup>15</sup> (15) *P.sphaericus*\* (Klein, 1905)<sup>16</sup> Travassos, 1921<sup>3</sup> (16) *P.stromi* Travassos (1930)<sup>15</sup> (17) *P.stromi* var *punicus* Balozet et callot, 1938<sup>17</sup> (18) *P.tacapensis* Sonsino, 1894<sup>18</sup> (19) *P.taylori* (Tubangui, 1928)<sup>19</sup> Travassos, 1930.<sup>15</sup>

Other *Pleurogenoides* reported are (1) *P.sawanensis*\* Gupta, 1954<sup>29</sup> (2) *P.orientalis*\* Srivastava (1934)<sup>5</sup> (3) *P.attui*\* Kakaji (1968)<sup>40</sup> (4) *P.minor* Pigulevesky ( 1931)<sup>36</sup> (5) *P.odeningii* Kharoo & Khatri (2008).<sup>1</sup>

The present authors have critically analysed the details of *P.odeningii* & have reasons to consider the species in question to be the synonym of *P.gastroporus* Luhe, 1901.<sup>6</sup>

Out of all the species referred to above *P.gastroporus* Luhe (1901)<sup>6</sup> has been described by various authors viz.1. Simha (1958)<sup>41</sup>, Varma (1982)<sup>34</sup>, Prasad (1984)<sup>42</sup>, Verma (1995)<sup>43</sup>, Sah (1999)<sup>22</sup> and many other authors. (Table II)

Simha (1958)<sup>41</sup> reported *P.gastroporus* from *Chamaeleon* whereas rest of the authors reported *P.gastroporus* from *Rana cyanophlyctis*.

*Pleurogenes (Telogonella) sawanensis* Gupta (1954)<sup>29</sup> & *Pleurogenes gastroporus* Gupta & Agarwal (1966)<sup>26</sup> originally described under the genus *Pleurogenes* have been transferred to the genus *Pleurogenoides* Travassos (1921)<sup>3</sup> because in them intestinal caeca are short and never extend behind ventral sucker (the characteristic feature of *Pleurogenoides*). It was Mehra & Negi (1928)<sup>24</sup> who had splitted the genus *Pleurogenes* (Looss, 1896)<sup>35</sup> into two subgenera namely *Pleurogenes* (*Pleurogenes*) and *Pleurogenes (telogonella)* on the basis of the length of intestinal caeca & position of genital pore. In the former the intestinal cæca reach near middle of body about the level of ventral sucker & the genital pore lies in front of the intestinal bifurcation near oral sucker ( a character similar to *Pleurogenoides*) & in the latter the intestinal caeca extend much behind the ventral sucker reaching about the last quarter of body length and the

genital opening lies at the level with or behind intestinal bifurcations about midway between the pharynx & the ventral sucker. *P.sawanensis* Gupta (1954)<sup>29</sup> was described under the subgenes *Pleurogenes* (*Pleurogenes*). But the table I indicates the difference between *Pleurogenes* & *Pleurogenoides* & hence the above two referred species are transferred to *Pleurogenoides*.

## MATERIALS AND METHODS

The authors have consulted original descriptions of almost all the species described under the genus *Pleurogenoides* and examined few available slides of *Pleurogenoides gastroporus* (Luhe, 1901)<sup>6</sup> lying with various authors mentioned above & his own collections.

## OBSERVATIONS & DISCUSSION

The camera lucida drawing of *P.odeningii* Kharoo & Khatri (2008)<sup>1</sup> resemble *P.gastroporus* described earlier.

The following observations are made :-

- a. The testes are partially post acetabular. Their anterior borders extend to mid level of acetabulum.
  - b. Vitellaria extend from oral sucker or pharynx to the level of acetabulum.
- A comparative chart of *P.gastroporus* described by various authors & *P.odeningii* has been provided to assess the exact position of the latter species : It depicts that-
1. The length of *P.odeningii* very well fits in the range given by Sah (1999)<sup>22</sup> for *P.gastroporus*.
  2. Oral sucker length of *P.odeningii* (0.224 – 0.24) fits in the range given for *P.gastroporus* by Varma (1982),<sup>34</sup> Simha (1958)<sup>41</sup> Sah (1999).<sup>22</sup>
  3. Acetabulum diameter range of *P.odeningii* (0.22 – 0.25) fits in the range of *P.gastroporus* described by Varma (1982),<sup>34</sup> Simha (1958)<sup>41</sup> & Sah (1999).<sup>22</sup>
  4. Cæca terminate at the anterior region of testes in *P.odeningii*, similar situation was found in *P.gastroporus* described by Varma (1982),<sup>34</sup> Sah (1999).<sup>22</sup>
  5. Size of left testis in *P.odeningii* fits in the range provided for *P.gastroporus* by Varma (1982),<sup>34</sup> Prasad (1984)<sup>42</sup> & Sah (1999).<sup>22</sup> Right testis measurement range 0.19 – 0.24 fits very well in the measurement range given for *P.gastroporus* by Prasad (1984)<sup>42</sup> & Simha (1958).<sup>41</sup>
  6. Size of cirrus sac in *P.odeningii* (0.64 – 0.688) fits

\*Indian forms

Pleurogenoid gastroporus as described by various authors  
(All measurements in mms except in 3 where measurements have not been given) vis-à-vis *P. odeningii*

	<i>P.gastroporus</i> Luhe 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901
Host	Chamaeleon 1	<i>R.cyanophlyctis</i>	<i>Rana cyanophlyctis</i>	<i>Rana cyanophlyctis</i>	<i>Rana cyanophlyctis</i>	<i>Rana cyanophlyctis</i>	Unidentified snake 6
Location	?	Instestine	Instestine	Instestine	Instestine	Instestine	?
Locality	Hyderabad	Pathsalal (North Kamrup (Assam)	Khunuti (Ranchi) Jharkhand	Gaya, Bihar	Ranchi, Jharkhand	Ranchi, Jharkhand	?
Author	Sinha, 1958	Varma, 1982	Prasad, 1984	Biva Verma, 1995	Sah, 1999	Kharoo & Khatri, 2008	
Body	1.52 – 1.98 x 0.871 – 1.14	Spatulate to ovoid Spinoe, ant. end. Narrow blunt, post end broad round 1.04 – 2.08 x 0.68 – 1.18	Oval 1.608 x 0.780	Ovoid to oval spinose 0.83 – 1.46 x 0.581 – 1.012 Ratio BL/BW = 1.1.428 – 1.442	Oval with rounded exterior spinoe, broadest at the region of testis	Oval with rounded exterior (width in the middle of body spinoe in half, spines absent in post half behind acetabulum.	<i>P. odeningii</i>
Suckers	OS > Act	Subequal	Act > OS	-	-	Equal	
Oral sucker	0.198 – 0.277	Subterminal, spherical or slightly oval 0.18 – 0.30 X 0.2 – 0.30	0.192 – 0.240	Median or submedian spherical 0.049 – 0.249 x 0.166 – 0.249	Subterminal round to spherical 0.224 – 0.24 x 0.256 – 0.272		
Acetabulum	0.178 – 0.277	Equatorial or slightly preequatorial on the midline of body slightly smaller than OS, spherical 0.16 – 0.30 x 0.16 – 0.30	0.204 x 0.204	Equatorial or slightly pre equatorial larger than subteiminal OS	Equatorial or slightly post equatorial, smaller than oral sucker 0.132 – 0.232 x 0.149 – 0.265 circular at 0.348- 0.498 from ant. ext.	Circular, in middle of body 0.22 – 0.25 (in dia)	
Prepharynx	Absent	-	-	-	Absent	Absent	
Pharynx	0.1 – 0.12 x 0.079 – 0.1	Cup shaped 0.01 – 0.1 x 0.10 x 0.10 – 0.14	Globular 0.036 x 0.084	Well developed	Ovoid 0.0498 – 0.083 x 0.083 – 0.996	Small obliterated by vit. follicles	
Oesophagus		Short 0.02 – 0.08	Long 0.096	Very small	Short	Very small	
Intcaeae		Short, terminate preequatorically at the level of mid acetabulum but never surpass post margin of acetabulum touch and margin of testis	Gaece unequal, rt being larger inwardly inclined, extend upto acetabular zone	Extend upto the level of Act.	Terminate ant. to respective side of testis	Terminate at the ant. region of testes.	
Testes	Rt.T – 0.277 x 0.237 Lt. 0.316-0.475 X 0.217 – 0.336	Sub lateral, subequal entire equatorial & lateral to acetabulum sometimes postero-lateral to acetabulum Rt testis slightly larger than left testis (ovarian side), lateral to ventral sucker, round of oval	Unequal, postaeacal & post acetabulac Lt. tes 0.168 x 0.168 Rt.test 0.204 x 0.252 situated at 0.74-4 – 0.780 from ant. end.	Two symmetrical in acetabular zone touch the post end of caccum	Spherical, oval subequal entire equatorial or slightly post equatorial, symmetrical behind terminal end of caeca (rt (ovarian side) – 0.132 – 0.215 x 0.132 – 0.298 as 0.398 – 0.680 from ant. enter. T <sub>2</sub> (non ovarian side) 0.116 – 0.182 x 0.166 – 0.265 at 0.381 – 0.614	Round to spherical, in lateral side in the region of acetabulum, extends a little post to act. Rt. Testis 0.19 – 0.24 x 0.22 – 0.24 Lt. testis 0.16 – 0.2 x 0.22 – 0.24	

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	<i>P.gastroporus</i> Luhe 1901 Travassos, 1921	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.gastroporus</i> Luhe, 1901	<i>P.odeningii</i>
Rt. testis Lt. testis	1	0.20 – 0.38 x 0.16 – 0.32 0.18 – 0.30 x 0.14 – 0.32				
Cirrus sac	0.594 – 0.633 x 0.164 – 0.178	Large, curved extends from genital pore to antero lateral (left margin of acetabulum) & cross over left caecum 0.38 – 0.80 x 0.12 – 0.20	Well developed extends obliquely from upper margin of acetabulum to the genital pore (in left body margin at the level of pharynx	Claviform, crosses left caecum ventrally & extends upto acetabulum	Claviform 0.257 – 0.415 cross left caecum ventrally extend from g.p. upto a little in front or lateral middle portion of VS. of Act. dorsally after crossing left int. caecum.	0.64 – 0.688 x 0.12 – 0.16 large elongated extremity slightly curved in opp. direction, sac obliquely placed overlaps ant. margin of Act. dorsally after crossing left int. caecum.
Ves. Seminali s		0.24 – 0.48 (coiled in some cases)	0.384	Coiled in cirrus sac	Present	Occupies basal swollen part of cirrus sac
Genital pore		Sub marginal or marginal on elevated left body margin, at level with mid or post- margin of OS, at a distance of 0.22 – 0.52 from ant. extremity.		Marginal on left side at the level of oral sucker	On left body sublateral at the mid level of oral sucker much ant to testes of non ovarian side.	At the equatorial region of oral sucker closer to body wall on left side
Ovary		Oval or spherical intercaecal, preequatorial pre acetabular, pre testicular & situated lateral to rt. caecum or overlapping the right caecum 0.12 – 0.26 x 0.12 – 0.24	Round, pretesticular & extracaecal 0.156 x 0.156 & at 0.492 from ant. end	Preacetabular & in front of rt. Testis separated from act. by rec. seminis	Oval to spherical 0.099 – 0.23 x 0.099 – 0.182 at rt. ant. lateral side of ventral sucker & inner to right caecum & ant. to rt. Testis, its part cover a part of rt. caecum at 0.298 – 0.431 from ant. ext.	Spherical, preequatorial in front of rt. testis between acetabulum & body wall on right side usually overlap rt. caecum 0.16 – 0.17 x 0.17 – 0.20
Uterus		Coils form a compact & convoluted mass post testicular, post acetabular part in hind body	Confined in hind body	Occupies all post acetabular space	Occupies most part of post acetabular zone	Highly convoluted, behind testes in post equatorial region.
Vit.foli cles		Extracaecal lateral field, overlap caeca or CS or both, in some cases invade intercaecal field to become confluent. Rt. side extension 0.38 – 0. Lt. side extension -?	Both extra & intercaecal commence at 0.360 & 0.264 from ant. end.	Follicular & scattered between Rt. and left. body margins from the level of middle of acetabulum to middle of OS	Follicular situated in pretesticular lateral field, confluent in middle, extends from middle of ventral sucker upto ant. of testis, a few invade between int. bifurcation & sucker	Follicular, distributed between oral sucker & testis never extend beyond int caecum termination
Rec. sem		0.14 – 0.24, between the triangle formed by rt. Testis, acetabulum & ovary in the middle third of body, in		Flask shaped.	Flask shaped, is sandwitched between ovary ventral sucker & rt. testis	Small behind ovary

well in the measuremental range for *P.gastroporus* as given by Varma (1982).<sup>34</sup>

7. Genital pore in *P.odeningii* (at equatorial region of oral sucker closer to body wall on left side is similar to *P.gastroporus* described by Verma (1995).<sup>43</sup>

Skarbilovich (1948)<sup>44</sup> while reviewing the family *Lecithodendriidae* opines that “the location of genital pore proved a more constant & diagnostic feature. The subfamilies have been characterized on the basis of this feature. A median position of the genital pore in front of the abdominal sucker is the characteristic of the subfamily *Lecithodendriinae* Looss and the same position behind abdominal sucker is the characteristic of the subfamily *Gyrabascinae* Macy. Lateral position of the genital pore in front of the abdominal sucker is the characteristic of the family *Pleurogeninae* Looss & the same position behind the abdominal sucker in the characteristic of the subfamily *Allasogonoporiinae*” Skarbilovich (1948).<sup>44</sup>

Thus if the genital pore position is given priority & stress, it varies in different species of the genus *Pleurogenoides* too for example.

- (a) The genital pore is at the level of oral sucker is met in *P.tener* (Looss, 1896),<sup>35</sup> *P.gastroporus* (Luhe, 1901),<sup>6</sup> *P.sphaericus* (Klein, 1905),<sup>16</sup> Travassos, 1921,<sup>3</sup> *P.freycineti* (Johnston, 1912),<sup>7</sup> *P.taylori* (Tubangui, 1928),<sup>19</sup> Travassos, 1921,<sup>3</sup> *P.stromi* (Travassos, 1930),<sup>15</sup> *P.hashimi* (Rohde, 1963)<sup>11</sup> & *P.odeningii* Kharoo & Khatri (2008).<sup>1</sup>
- (b) Genital pore is lateral at the level of oesophagus in *P.medians* ( Olsson, 1876)<sup>4</sup> Travassos, 1921<sup>3</sup> & *P.japonicus* (Yamaguti, 1936;<sup>8</sup> Kaw, 1943<sup>9</sup>) (at the middle level of oesophagus or intestinal bifurcation).
- (c) In *P.solus* (Johnston, 1912)<sup>7</sup> Travassos, 1930<sup>15</sup> the genital pore is situated at the level of pharyngeal region whereas in *P.sitapuri* (Srivastava, 1934);<sup>5</sup> Kaw, 1943,<sup>9</sup> it is on the lateral margin at the level of pharynx & in *Pminus* pigulevsky (1931)<sup>36</sup> genital pore is at the lower level of pharynx. In *P.compactus* (Shtrom, 1940)<sup>10</sup> genital pore is situated on the left side of body at the posterior margin of pharynx.
- (d) Genital pore is at (i) the level of intestinal bifurcation or a little anterior to it in *P.bufonis* (Kaw, 1943)<sup>9</sup> (ii) marginal & subterminal in *P.petropedatis* (Williams et Coker, 1967)<sup>13</sup> (iii) at the level of ovary or a little anterior

to it in *P.infranensis* (Dollfus, 1958).<sup>14</sup>

It would be worth while to compare the vitelline follicles of *P.odeningii* (Kharoo & Khatri 2008)<sup>1</sup> with other species of *Pleurogenoides*.

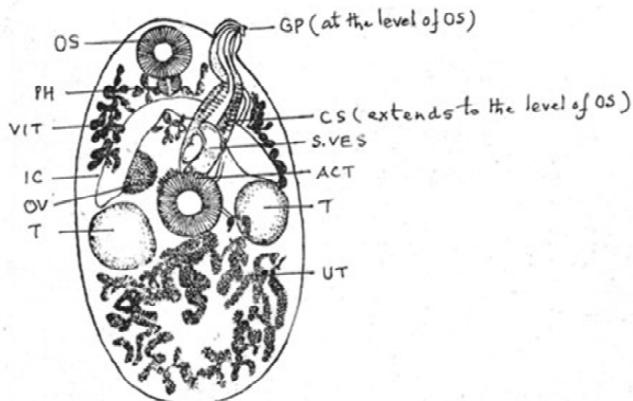
In the diagnosis of *Pleurogenoides* as on page 407 of Trematodes of animals & man by K.I. Skrybin (Published by amrind Pub. Co.) vitelleria has been shown to be “anterior to intestine, at the level of oral sucker & oesophagus”. Vitelline follicles are situated :

- (i) near oral sucker and pharynx in *P.tener* (Looss, 1899)<sup>2</sup>
- (ii) vit follicles occupy small spaces above intestinal cacea & consist of pellet sized follicles in *P.compactus* (Shtrom, 1940)<sup>10</sup>.
- (iii) vit.follicles are congregated behind pharynx & on right side extends upto anterior end of testis in *P.freycineti* (Johnston, 1912)<sup>7</sup>
- (iv) vit are extracecal confluent in middle but their extension on right & left side commence at mid of oral sucker upto caecal termination (on one side) but slightly ahead of caecal termination on the ovarian side caecum in *P.gastroporus* (Luhe, 1901).<sup>6</sup> Similar situation exists in *P.odeningii* (Kharoo & Khatri 2008).<sup>1</sup>
- (v) vit. Consist of a few large follicles that extend dorsally to anterior intestinal region & follicles are situated between level of oral sucker & oesophagus & almost touch each other along median line in *P.medians* (Olsson, 1876)<sup>4</sup> + oesophagus is long typically Y shaped, int caeca short & ovary elongated.
- (vi) On lateral sides of pharynx and oesophagus in *P.minus* (Pigulevsky, 1931)<sup>36</sup> + prepharynx is present, cirrus sac is S-shaped & there are two saccate intestinal caeca, ovary oval.
- (vii)Consists of an equal number (4-8) of large size pyriform follicles, left vitellarium is near to median line & situated behind intestinal bifurcation between cirrus sac & ovary, right vitellarium is nearer to right body wall & its anterior part converges slightly towards left vitellarium in *P.sitapuri* (Srivastava, 1934)<sup>5</sup>
- (viii)Vit are few near the intestinal bifurcation in *P.solus* (Johnston, 1912)<sup>7</sup>
- (ix) Vit are near intestinal bifurcation mostly concentrated above ovary & testes in *P.sphaericus* (Klein, 1905).<sup>16</sup>
- (x) Vitellaria are anterior to intestinal caeca & consist of a few but comparatively voluminous follicles in *P.stromi*

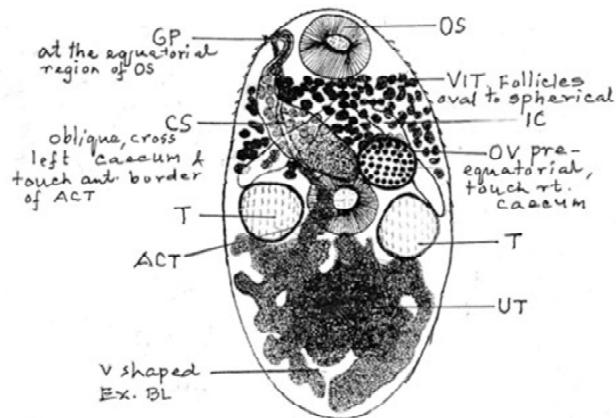
**Kumari et al.: On the synonymy of *Pleurogenoides odeningii* Kharoo & Khatri, 2008 (Pleurogeninae : Lecithodendriidae : Trematoda) with *Pleurogenoides gastroporus* Luhe, 1901.**

(Travassos, 1930)<sup>15</sup>

- (xi) Vitellaria are arranged in groups of seven to nine round or oval follicles in anterior part of body just in front of testes and ovary, are asymmetrical, left vitellarium more median & nearer to inner side of cirrus sac in *P.taylori* (Tubangui, 1928)<sup>19</sup> Travassos, 1930.<sup>15</sup>



**Fig.1. *Pleurogenoides gastroporus* (Luhe, 1901)**



**Fig.2. *Pleurogenoides odendingii* Kharoo & Khatri, 2008 ( From Nat.Jour.Life Sciences)**

## CONCLUSION

On the basis of the similarities discussed before between *P.odendingii* (Kharoo & Khatri 2008)<sup>1</sup> & *P.gastroporus* (Luhe, 1901),<sup>6</sup> the former is considered synonym of the latter.

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