

***Benedenia derzhavini* (Trematoda: Monogenea) from Cultured Korean Rockfish, *Sebastes schlegeli*, in Korea**

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The benedeniine monogenean *Benedenia derzhavini* (Layman, 1930) Meserve, 1938 from cultured Korean rockfish, *Sebastes schlegeli*, is described and reported for the first time in Korea. The parasite was recovered from the gills and inner wall of operculum. *B. derzhavini* is distinguished from *B. seriola* and *B. Sebastodis* by the relative shape and length between the accessory sclerites and the hamuli.

Key words: *Benedenia derzhavini*, Monogenea, Cultured Korean rockfish

Benedeniine monogeneans belonging to the family Capsalidae are pathogenic to fish under culture (Thoney and Hargis, 1991). Especially, *Benedenia seriola* caused mass mortalities of cultured yellowtail, *Seriolar quinqueradiata*, in Japan (Hoshina, 1968; Egusa, 1983) and in Korea. There has been no record of benedeniines from cultured Korean rockfish, *Sebastes schlegeli*. Recently, we recovered for the first time another benedeniine species from cultured Korean rockfish, and identified the species as *Benedenia derzhavini* (Layman, 1930) Meserve, 1938.

In the present study, we report *B. derzhavini* from Korean rockfish as the first recording species in Korea, and redescribe morphological characteristics of the species in detail.

In April 1997, a number of netpen reared Korean rockfish (body length: 17-26 cm) were obtained from a local rockfish producer in Jangheung, Korea. Fish were transported to the laboratory and were examined for monogeneans under a dissecting microscope. Recovered benedeniines were fixed in

hot 70% alcohol, stained with Semichon's aceto carmine, dehydrated in a graded ethanol series, cleared in xylene, and mounted in Canada balsam. Mounted specimens were examined under a light microscope, and were illustrated with the aid of a camera lucida. Measurements of the specimens are in mm unless otherwise stated.

***Benedenia derzhavini* (Layman, 1930) Meserve, 1938**

Description (based on 5 adult worms) : Body elongate oval, length including haptor 2.80-4.55, maximum width 1.25-2.48 at mid-level of testes. Prohaptor elliptical, unlobed, aseptate, 0.34-0.57 long by 0.30-0.50 wide. Opisthaptor oval, aseptate, 1.25-2.00 wide, with 1 pair of accessory sclerites, 1 pair of anterior hamuli, 1 pair of posterior hamuli and numerous marginal hooklets. Accessory sclerites stout, scoop-shaped with pointed tips directed anteriorly, 0.16-0.35 long. Anterior hamuli long, slender, recurved posteriorly, but straight at posterior end, 0.16-0.28 long. Posterior hamuli slender, with smoothly recurved posterior terminus, 0.11-0.26 long. Marginal hooklets arranged radially in op-

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isthaptor, 0.07-0.13 long. Two pairs of eye spots anterior to pharynx. Pharynx 0.24-0.40 long by 0.27-0.60 wide, with 5 lobes. Intestinal crura united posteriorly, dendritic medially and laterally. Two testes juxtaposed, equatorial, smooth, ellipsoidal, 0.33-0.55 long by 0.26-0.40 wide. Male copulatory organ elongated claviform, obliquely situated posterior to pharynx, consisting of a penis and an oval-shaped seminal vesicle. Penis slightly tapering anteriorly, 0.65-1.20 long. Gonopore ventral, opens left margin of body at level of anterior border of mouth. Ovary pretesticular, medial, oval, 0.21-0.40 long by 0.20-0.35 wide. Uterus juxtaposed with cirrus sac, leading to gonopore, and with well developed muscular sphincter structure. Vagina long, slightly sinuous, opens dorsally left margin of body behind gonopore. Vitellaria follicular, occupying almost entire available space of body proper, vitelline ducts uniting medially to form a transverse vitelline reservoir just anterior to ovary.

Host: *Sebastes schlegeli*

Habitat: gill and inner wall of operculum

The most distinguishing characteristics of *Benedenia derzhavini* from *B. seriola* are the shape and relative lengths between the anterior hamuli and the posterior hamuli (Table 1). In *B. seriola*, the anterior hamuli are considerably stouter and larger than the short, slender posterior hamuli. On the other hand, the anterior hamuli of *B. derzhavini* are similar with the posterior hamuli in shape and length.

Yamaguti (1934) reported *B. Sebastodis* from gills of *Sebastes inermis* collected at Ise bay of Japan as a new species. *B. Sebastodis* is very similar with *B. derzhavini* in almost all morphological characters, except the body size and relative lengths between the accessory sclerites and the hamuli (Table 1). The body size of *B. Sebastodis* is much smaller than that of *B. derzhavini*. The lengths of

Fig. 1. *Benedenia derzhavini* (Layman, 1930) Meserve, 1938 from cultured Korean rockfish; Ventral view, scale bar=1 mm (as: accessory sclerite, c: cirrus, h: hamuli, i: intestinal crura, o: ovary, oh: opisthaptor, p: pharynx, ph: prohaptor, sv: seminal vesicle, t: testis, u: uterus, v: vagina, vr: vitelline reservoir, vt: vitellaria).

Table 1. Comparative measurements (in mm) of *Benedenia derzhavini*, *B. seriola* and *B. Sebastodis*

Species	<i>B. derzhavini</i>	<i>B. derzhavini</i>	<i>B. seriola</i>	<i>B. Sebastodis</i>
Authority	Layman (1930)	Present specimens	Yamaguti (1934)	Yamaguti (1934)
Body length	6.0	2.80-4.55	6.6	1.55-1.87
Body width	3.5	1.25-2.48	3.9	0.73-0.77
Prohaptor	-	0.34-0.57 × 0.30-0.50	0.78-0.80 × 0.55-0.62	0.15-0.25 (diameter)
Opisthaptor	3.11	1.25-2.00	1.81	0.40-0.50
Accessoriesclerites (length)	0.30	0.16-0.35	0.44	0.078-0.084
Anterior hamuli (length)	0.21	0.16-0.28	0.48	0.12
Posterior hamuli (length)	0.20	0.11-0.26	0.10	0.12

anterior and posterior hamuli are longer in *B. sebastodis*, but shorter in *B. derzhavini* than that of accessory sclerites.

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양식 조피볼락에서의 *Benededia derzhavini* 기생에 관한 국내 보고

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*Benedeniidae*과에 속하는 단생흡충류인 *Benededia derzhavini*(Layman, 1930) Meserve, 1938가 양식 조피볼락의 아가미와 아가미 뚜껑 내벽에 기생하고 있음을 국내에서 처음으로 보고하며, 아울러 이 종의 형태학적 특징을 자세히 기술하였다. *B. derzhavini*는 *B. seriolae* 및 *B. Sebastodis* 등의 종들과 accessory sclerite와 hamuli의 형태 및 상대적인 길이 비율 차이에 의해서 구별되었다.

Key words: *Benedenia derzhavini*, Monogenea, Cultured Korean rockfish