

Infectious Status on Monogenetic Trematodes of *Sebastes* spp. (Family : Scorpaenidae) Including *Microcotyle sebastis*, *Megalocotyle trituba* and *Trochopus australis* in Newport Fish Market

KaeShik Chun[†]

Department of Environmental Health, Yongin University
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Abstract : Nine (34.6%) of the 26 rockfishes taken from Newport fish market, Oregon in July 2003 had a total of 135 monogenetic trematodes attached the gills. *Microcotyle sebastis*, *Megalocotyle trituba* and *Trochopus australis* were encountered, occurring in rockfishes examined. In the monogenetic trematodes in *Sebastes* spp, the prevalence were found to be between 30.8 and 40.0%. Prevalence of *M. sebastis* was 37.5%, 40.0% on *M. trituba* and 30.8% on *T. australis*. Nine of *Sebastes* spp. were infected with one or two species of monogenetic trematodes. Intensities of infection for *M. sebastis*, *M. trituba* and *T. australis* were recorded as 2.0 (2-12), 22.0 (48-62) and 1.0 (1-3), respectively. It may be that the intensities of infection for *M. trituba* should be high, and *M. sebastis* and *T. australis* little low.

Keywords : monogenetic trematodes, *Sebastes* spp, *Microcotyle sebastis*, *Megalocotyle trituba*, *Trochopus australis*

Introduction

Monogenetic trematodes may weaken the rockfishes by damaging gills. Monogenea can be the cause of host mortality and epizootics because they affect the health of fish¹⁾. Monogenean of fishes may be one of the factors contributing to the fishing decline. Monogenetic trematodes can be easily infected on fish maintained in captivity under favorable temperature conditions due to their direct life cycle. Records of ectoparasitic species with monoxenous life cycles such as *M. sebastis* and *Trochopus* spp. which typically infect *Sebastes* spp. are probably the result of interhost transfer during host capture. The importance of dissemination of parasitic and infectious diseases in fish has been recognized^{2,3)}.

The purpose of this study was to determine the prevalence and infection intensity of monogenetic trematodes of rockfishes collected from fish market.

Materials and Methods

Rockfishes purchased from a commercial supplier of Newport fish market were used as a source of monogenetic trematodes. All fish were stored on ice. The rockfishes were transported from the collection site to the laboratory and examined within 48 hr of collection. Rockfishes were fixed in 10% formalin. The fork lengths were recorded at necropsy. Twenty six rockfishes representing four species were collected and examined for monogenetic trematodes. Each gill was removed separately from fish placed in labeled jars with a solution of 1 part 10% buffered formalin acetate. Gill parasites at the time of necropsy were identified by the use of a key⁴⁾. Examinations were made with the aid of a stereoscopic microscope using magnifications of 40x. Infested gill arches were separately preserved in 8% formalin, labelled, and stored for later identification. Standard procedures were used to examine the rockfishes for monogenetic parasites and to clarify the prevalence and intensities of the infections encountered. Monogenea collected were identified. The number of worms on gills on each rockfishes was counted. The worms were fixed in glycerin

[†]Corresponding author : Department of Environmental Health, Yongin University
Tel. 82-31-330-2747, Fax. 82-31-330-2886
E-mail : kschun@yongin.ac.kr

alcohol (1:4).

Scientific and common names utilized for rockfishes are those recognized by Marine Advisory Bulletin (1995). The terms of the level of parasitic infection are used in this paper according to Margolis et al (1982). Prevalence and intensity of infection were determined for each species of monogenea. Prevalence is the percentage of rockfishes infected, and intensity is the number of monogenea per infected rockfishes.

Results and Discussions

Twenty six *Sebastes* spp. which were collected from fish market had an average infection rate of 34.6%. One hundred thirty five individuals of monogenetic trematodes were taken from the gills of rockfishes, *Sebastes* spp. No parasites were present at any sites except the gills. Monogenea have a great affinity or specificity for gills of the host. There was monogenetic trematodes carried 110, which is the highest figure in this study. The incidence in 26 rockfishes was 34.6%. The average length of *Sebastes* spp. examined was 42.0 cm, ranging from 31.5 to 52.4 cm. *Sebastes* spp. purchased in the Newport fish market have been identified as *Microcotyle sebastis* Goto, 1884, *Megalocotyle trituba* Folda, 1928, and *Trochopus australis* Diesing, 1850. Each of these *Sebastes* spp. carried from 1 to 62 individuals of monogenea on their gills. Of the 26 *Sebastes* spp. examined for this study, three were *M. sebastis*, two were *M. trituba*, and four were *T. australis*. Nine of 26 rockfishes examined were parasitized by one or two specimens of monogenetic trematodes. From 9 rockfishes, three different species of monogenea were identified while 17 rockfishes none were found. Of 4 specimens, two were parasitized by one species of monogenea.

Included are species of the families Microcotylidae,

and Capsalidae. *S. maliger*, *S. melanops*, *S. pinniger*, and *S. crameri*, all of which belong to the family Scorpaenidae. *M. sebastis* were found in *S. maliger* and *S. melanops*. *M. trituba* and *T. australis* were observed on *S. pinniger*, *S. crameri*, respectively. Three species of monogenetic trematodes were collected from gills of rockfishes. Overall the species accounted for 36.1% of all monogenea observed during this study. Of the rockfishes examined, 37.5% carried *M. sebastis*, 40.0% had *M. trituba*, and 30.0% had *T. australis*. Of the three species of monogenean occurring in the fish market, *M. trituba* and *T. australis* infected *S. pinniger* and *S. crameri*, respectively while *M. sebastis* infected *S. melanops* and *S. maliger*. The maximum number of *M. trituba* on *S. pinniger* was 62. *S. pinniger* were infected with greater numbers of monogenetic trematodes than other *Sebastes* spp. *Megalocotyle trituba* was highly infected, being found only on *S. pinniger*.

Prevalence of 37.5% was recorded at *M. sebastis*, and 30.8% at *T. australis*. The prevalence of *T. australis* was low when compared with that of *M. sebastis* and *M. trituba*. Of 26, nine carried monogenetic trematodes on their gills : 3 carried 16 *M. sebastis*, 2 carried 110 *M. trituba*, and 4 carried 9 *T. australis*. Twenty six individuals sampled, carried a mean of 2.0 *M. sebastis* (range 2-12), 22.0 *M. trituba* (48-62), and 1.0 *T. australis* (1-3). The intensity of the infections varied. The intensity of *M. sebastis* and *T. australis* within each infected host remained low. Prevalence and intensity of infection on *M. trituba* averaged 40.0% per sampling and 22.0 worms per fish, respectively. Prevalence and intensity of infections were higher on *M. trituba* than on *M. sebastis* and *T. australis*. *T. australis* remained at extremely low levels. Significantly much more monogeneans than expected occurred on the gills of the *S. pinniger*.

Table 1. A Summary of parasitism of *Sebastes* spp. collected from Newport fish market

Family	Genus and Species	Common name	No. examined	No. parasitized
Scorpaenidae	<i>Sebastes maliger</i> (Jordan and Gilbert)	Quillmack rockfish	3	1
	<i>Sebastes melanops</i> (Girard)	Black rockfish	5	2
	<i>Sebastes pinniger</i> (Gill)	Canary rockfish	5	2
	<i>Sebastes crameri</i> (Jordan)	Darkblotched rockfish	13	4
Total			26	9

Table 2. Prevalence and intensity of monogenean trematodes of 26 rockfishes

Family	Parasites	Prevalence (%)	Intensity	
			Mean	Range
Microcotylidae	<i>Microcotyle sebastis</i> Goto, 1884	37.5	2.0	2-12
Capsalidae	<i>Megalocotyle trituba</i> Folda, 1928	40.0	22.0	48-62
Capsalidae	<i>Trochopus australis</i> Diesing, 1850	30.8	1.0	1-3

Table 3. Monogenetic trematodes recorded from *Sebastes* spp.

Parasites	Hosts			
	<i>S. maliger</i>	<i>S. melanops</i>	<i>S. pinniger</i>	<i>S. crameri</i>
<i>Microcotyle sebastis</i>	+	++	-	-
<i>Megalocotyle trituba</i>	-	-	+++	-
<i>Trochopus australis</i>	-	-	-	+

- ; negative , + ; mild , ++ ; moderate , +++ ; heavy

Rhode (1984) has reported that monogenetic trematodes impair gill functions, e.g. excretion, osmoregulation, and irritate the branchial epithelium. Williams (1967) noted that heavy infestations of monogenetic trematodes may result under conditions of overcrowding, shallow stagnant water, and high environmental temperature.

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