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Metacercariae of Digenetic Trematoda, *Neascus* spp. in Chiselmouth, *Acrocheilus alutaceus* from the Willamette River

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Abstract : During a survey of the helminth parasites of fresh water fishes in Willamette River, metacercariae of Neascus spp. were found on examination of muscle, spinal cord, fin and skin of Chiselmouth, Acrocheilus alutaceus. One hundred percent of 19 Chiselmouth examined were found to be infected with digenetic trematodes. The prevalence of infection was higher in muscle, varying from 95% and 100%. Higher levels were present in muscle, such that the 100% level being found in upper anterior, lower anterior and posterior. Small numbers of metacercariae were found on the fin and skin. The commonest sites of infection were the musculature and spinal cord. Intensities of Neascus spp. metacercariae tended to be and high levels in muscle and spinal cord. Those were low levels occurred in the fin and skin. There was a high degree of Neascus spp. in the occurrence of digenetic trematode from Chiselmouth.

Keywords : metacercariae, *Neascus* spp., chiselmouth, prevalence, intensity

Neascus spp. metacercariae are common, digenetic trematodes, having a cosmopolitan distribution in the freshwater fish. Encysted *Neascus* spp. metacercariae were found in body musculature, spinal cord, fin and skin of Chiselmouth, *Acrochelus alutaceus* (Chandler, 1951). Naturally comparatively large digenetic trematodes in the fresh water fish are not only a direct drain on the host but mechanically may press on vital organs. The presence of metacercariae in musculature, viscera, and skin of fishes causes considerable harm. The metacercariae of *Neascus* sp. are commonly found in the Cyprinids in North America and Europe (Hoffman, 1967). Very little research relating to digenetic trematodes of fresh water fish from Willamette River has been conducted to elucidate the impact of pathogens on the survival of fishes at a population level. The objectives of this study are to determine the prevalence and intensity of the digenetic trematodes of Chiselmouth belonging to the family Cyprinidae.

Nineteen Chiselmouth, *Acrocheilus alutaceus* were caught in Willamette River, Oregon, USA using hand seine in July, 2003. The fish were transported alive to the laboratory and held alive in holding tanks for 48 hrs after capture before being examined. They were examined for digenetic trematodes by use of conventional parasitological techniques. Fish lengths were measured to the nearest centimeter. Fish were identified with the aid of descriptions and keys in Carl and Clemens (1953). Each parts of the flesh and the internal organs were washed and transferred to petri dishes for sorting. They were compressed between two slides and examined for the presence of metacercariae. The flesh was divided into 4 parts ; upper anterior region, upper posterior region, lower anterior region, lower posterior region. Any digenetic trematodes were fixed and stored in 8% formalin and afterwards stained with acid carmine. The specimens were identified by use of keys in Bykhovsky *et al.* (1962), Dollfus (1953) and Linton (1940). Prevalence and intensity were defined by Margolis *et al.* (1982). The prevalence and intensity were calculated for digenetic trematode. Prevalence of digenetic trematodes was expressed as percentage of fish in which the parasite occurred. Intensity refers to numbers of parasites presented in infected fish. The prevalence of upper anterior, lower anterior and posterior of muscles was record.

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The nineteen Chiselmouth examined in detail ranged in length from 11.1 to 18.2 cm.

The digenetic trematodes in this study were confined to single worms. The fish were *Acrocheilus alutaceus*, and relatively heavily infected with *Neascus* spp. *Neascus* spp. are a digenean group which parasitizes in musculature, spinal cord, skin, gill and fin of freshwater fishes. *Neascus* spp. occurred on muscles, spinal cords, fins and skins, but almost in muscles and spinal cords. There was a greater frequency of occurrence of the digenetic trematodes in muscle and spinal cord than in fin and skin. There appeared to be an attachment preference for the most muscle and spinal cord. Attachment was on the upper and lower location of muscle. There was a higher site of infection, i.e., habitat selection within the fish which could account for more susceptible to muscle and spinal cord. It is necessary to emphasize that organs such as muscle and spinal cord are thought to function in a manner in achieving the attachment to the host.

Prevalence levels and intensity of infection of digenetic trematodes remained high in musculature. The prevalence of digenetic trematodes was lower in fin and skin, but much higher in muscle and spinal cord. The prevalence of *Neascus* spp. at the site of Chiselmouth muscle was significantly higher than at the other sites. The prevalence of digenetic trematodes was recorded 100% from upper anterior, lower anterior and posterior of muscles while from 95% upper posterior. Musculature infection of the Chiselmouth by *Neascus* spp. was greater in the upper anterior region. The prevalence of *Neascus* spp. were similar to values for fin and skin. The mean intensities of *Neascus* spp. in muscle were consistently higher than those in the other site. The intensity of *Neascus* spp. was lower in fin, but much higher in the muscle and spinal cord. Mean intensities of digenetic trematodes in fin were similar to skin. Whatever the reason for the higher levels of parasitic infections, it may be resumed that digenetic trematodes are pathogenic (Poole and Dick, 1983). It is clear that *Neascus* spp. are widely distributed in the *Acrocheilus alutaceus* from Willamette River, Oregon.

Table 1. Prenalence and intensity of digenetic trematode of 19 Chislmouth from willamette River

Species	Site of infection	Prevalence (%)	Intensity	
			Range	Mean
Neascus spp.	Muscle	100	4-62	37.1
	Spinal cord	84.2	1-23	8.4
	Fin	26.3	0-14	2.3
	Skin	31.6	0-10	1.7

Table 2. Percentage prevalence and intensity (mean) of infection of digenetic trematode in muscles of Chiselmouth

Location	Prevalence	Intensity (mean)
Upper		
Anterior	100	12-58(36.8)
Posterior	95	4-44(25.2)
Lower		
Anterior	100	4-36(18.5)
Posterior	100	2-32(18.2)

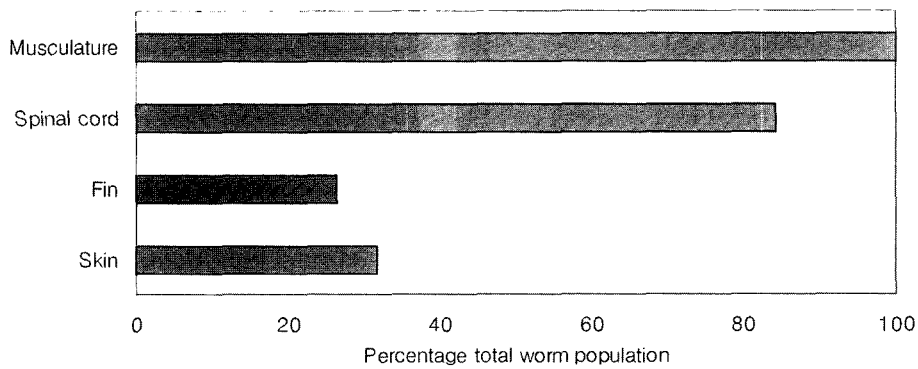

Fig. 1. The distribution of 2,117 metacercariae of *Neascus* spp. in Chiselmouth.

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