

Neoactinomyxon (Actinosporean Stage, Myxozoa) from Freshwaters of Meerut Region

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Abstract

Although we know about Myxosporean of fishes but practically nothing has been done on actinosporeans infecting oligochaetes from India. The Myxosporean are one of important group of micro organisms parasitizing marine & freshwater fishes, causing serious diseases including kidney disease & whirling disease in Salmonid. It has been established that actinosporean are infective stages of Myxosporean (Molnar et al., 1999). Water samples were collected from the fish culture ponds of Meerut region together with mud and roots of aquatic vegetation together with oligochaetes (*Tubifex tubifex*). Clear water was taken out & filtered through 10 pore size filter paper for examination of Neoactinomyxon. The photographs of Neoactinomyxon were taken with the help of Motic research microscope at high magnification . Digitized still images of the actinospore were taken with the help of Motic image programme & drawings of actinospore were made. The measurements were taken as described by Lom et al., (1997). The characterization and identification of the Neoactinomyxon recorded with the help of classical work of Yokoyama et al., (1993 and 1995).Mature spores were style-less, composed of spore body and three caudal processes. The spore body contains the sporoplasm with several infective cells and three polar capsules. Polar capsules are more or less pyriform in longitudinal view. The caudal processes are very short and a nucleus is visible in each of them. The present investigation has been started to isolate some actinosporean stage from Meerut region.

Keywords : Myxosporea, Actinosporean stage, Neoactinomyxon

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Introduction

The Myxosporea are the one of important group of micro organisms parasitizing marine and freshwater fishes. These pathogenic organism causing serious diseases including kidney disease & whirling disease in Salmonid. Heavy infection causes high mortalities of fish in ponds and natural reservoirs throughout the world. The transmission of myxosporideans from tubifex is remained unknown until now scant information is available on infection process of myxosporideans. (Fryer & Sanders, 1970; and Yokoyama *et al.*, 1991)

The causative agent of whirling disease *Myxobolus cerebralis* had a two host life cycle, involving fish and an invertebrate and alternate two different sporogenic stages in the life cycle Markiw and Wolf, (1989). It has been established that actinosporean are infective stages of myxosporean (Molnar *et al.*, 1999)

No information available on the life cycle stages of myxosporean protozoan parasite, the causative organism of whirling disease and kidney disease of freshwater fishes from India. The present investigation of myxosporidea from freshwater of Meerut region has taken into consideration for the possibility of the disease in the freshwater fishes.

Materials and Methods

Water samples were collected from the fish culture ponds of Meerut region together with mud and roots of aquatic vegetation together with oligochaetes

(*Tubifex tubifex*).

The samples were kept in separate plastic containers filled with water & allowed to settle down the mud for 24 hours. From each of these containers, clear water was taken out & filtered through 10 pore size filter paper for examination of actinospores. The filtering material was shifted on a glass slide & examined for presence of actinospores at various magnifications under a microscope.

The photographs of actinospores were taken with the help of Motic research microscope at high magnification. Digitized still images of the actinospores were taken with the help of Motic image programme & drawings of actinospores were made. The measurements were taken as described by Lom *et al.*, (1997). The characteristic dimensions of actinospores like polar capsule, spore body, style caudal process and whole body length were measured with the help of Motic image analyzing system. Measurements were confirmed with the help of stage micrometer and oculometer. The characterization and identification of the actinospores recorded with the help of classical work of Yokoyama *et al.*, (1993 and 1995)

Result and Discussion

Actinospore, *Neoactinomyxon* was isolated from the water samples collected from ponds of Meerut region.

Mature spores were style-less, composed of spore body and three caudal processes. The spore body contains the sporoplasm with several infective cells and

three polar capsules. Polar capsules are more or less pyriform in longitudinal view. The caudal processes are very short and a nucleus is visible in each of them. The size of caudal process is 6.1 x 5.6 . The average dimension of polar capsule is 1.1 x 1.6 m. Mean diameter of spore body is 8.1 m. Largest span is 17.1 m.



Fig 1 Photomicrograph .
Neoactinomyxon sp.



Fig 2 Line Drawing of
Neoactinomyxon sp.

Research on actinosporean gathered momentum after Wolf & Markiw, (1984) who demonstrated that the fish parasitic myxosporean, *Myxobolus cerebralis* had an Actinosporean stage developing in *Tubifex tubifex*. Since then, there has been an avalanche of reports on actinosporean infections & studies on the life cycle of myxosporea involving polychaetes (Bartholomew et al., (1997); Koller, (1994); Szekely et al., (2000); Alvarez-Pellitero et al., (2001) and Szekely et al., (2003))

Actinosporean infections of oligochaetes and their presence in natural waters and fish ponds have been studied by many workers like Ikeda, 1912, Mackinnon & Adam, 1924, Janiszewska, 1955 and 1957. Subsequently in recent years, actinosporean infection of oligochaetes have been studied successfully by numerous workers throughout the globe by workers like Markiw(1986); El-Matbouli and Hoffman(1989); Szekely (1989); Yokoyama et al., (1991); El-Matbouli and Hoffman (1993); Kent et al., (1993); El-Matbouli et al., (1995); Pallos (1995); Uspenskaya (1995); Yokoyama et al., (1995) and Trouillier et al., (1996).

Conclusion

From Indian subcontinent, practically nothing has been done on actinosporeans infecting oligochaetes although, we know about myxosporean of fishes. During the course of study, the investigator noticed the presence of.,

Neoactinomyxon sp. From Indian freshwaters. This identification is based on the characteristic features and guidelines given by Lom et al., (1997). The investigator was not successful in identifying the actinosporeans upto species level due to some technical constrains. But this preliminary survey of actinosporeans from Indian freshwaters shows that this subject has vast potential in India.

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