

**Research Article**

## **OCCURRENCE OF CYSTICERCUS OF *TAENIA TAENIAEFORMIS* IN LIVER OF ALBINO-RAT: A REPORT**

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### **ABSTRACT**

Present study deals with the investigations of infection of *Cysticercus fasciolaris* of tape worm, *Taenia taeniaeformis* in the liver of Albino-rat. About 6.6% parasitemia was recorded. 5-10 white cysts containing one *Cysticercus* larvae of 12.0-21.0cm (16.67 $\pm$  1.05cm.) per cyst were observed. *Cysticercus* larvae appear to be of *Taenia taeniaeformis*, a tape worm of cat and other members of family Felidae. Behavioral, histological and biochemical effects of parasite as well as possible treatment measures have been discussed.

**Keywords:** *Cysticercus*, *Taenia taeniaeformis*, Liver, Albino-Rat

### **INTRODUCTION**

During maintenance of Albino-rats in laboratory for different experimental purposes, some rats showed lethargy, anorexia, weight loss and sudden death.

To know the aetiology of these altered behaviors, animals were dissected and found infected with 5-10 creamish white cysts containing *Cysticercus* larvae, in the liver.

Such type of infections has also been reported earlier in different rodent species (Seo *et al.*, 1964; Hanes, 1995; Gallati, 1956; Armado and Rovira, 2007; Singla *et al.*, 2009; Shashi *et al.*, 2013).

*Taenia taeniaeformis* is an intestinal tapeworm of cats and other feline species as well as carnivores of family Canidae and Mustelidae (Schmidt, 1986), which uses rats and other rodents as secondary host to complete its life cycle (Al-Nazzar, 2009; Karim, 2010).

Its *Cysticercus* stage occurs in cysts in liver of rats. Some sporadic cases of human infection of *Taenia taeniaeformis* have also been reported from various countries like Sri Lanka, Argentina, Denmark etc. (Ekanayaka *et al.*, 1999).

Albino rats are cultured and maintained for various experimental purposes in laboratories and uninfected animals are an essential requirement.

Considering the above facts, the present study has been taken into account.

### **MATERIALS AND METHODS**

Albino-rats having weight range of 150-300gm, showing altered behavior, were dissected out to expose liver. Livers were found infected with 4-10 Creamish white cysts containing fluid.

*Cysticercus* were taken out from cyst, flattened in normal saline at 60°C and fixed in 10% Neutral Buffered Formalin for 24hrs.

Animals were dehydrated in graded series of Ethanol, stained in Aceto-Alum-Carmine, cleared in xylene and mounted in Canada Balsam. Prepared slides were studied (Yamaguti, 1959; Schmidt, 1986; Smyth, 1996) and photographed with Olympus trinocular microscope.

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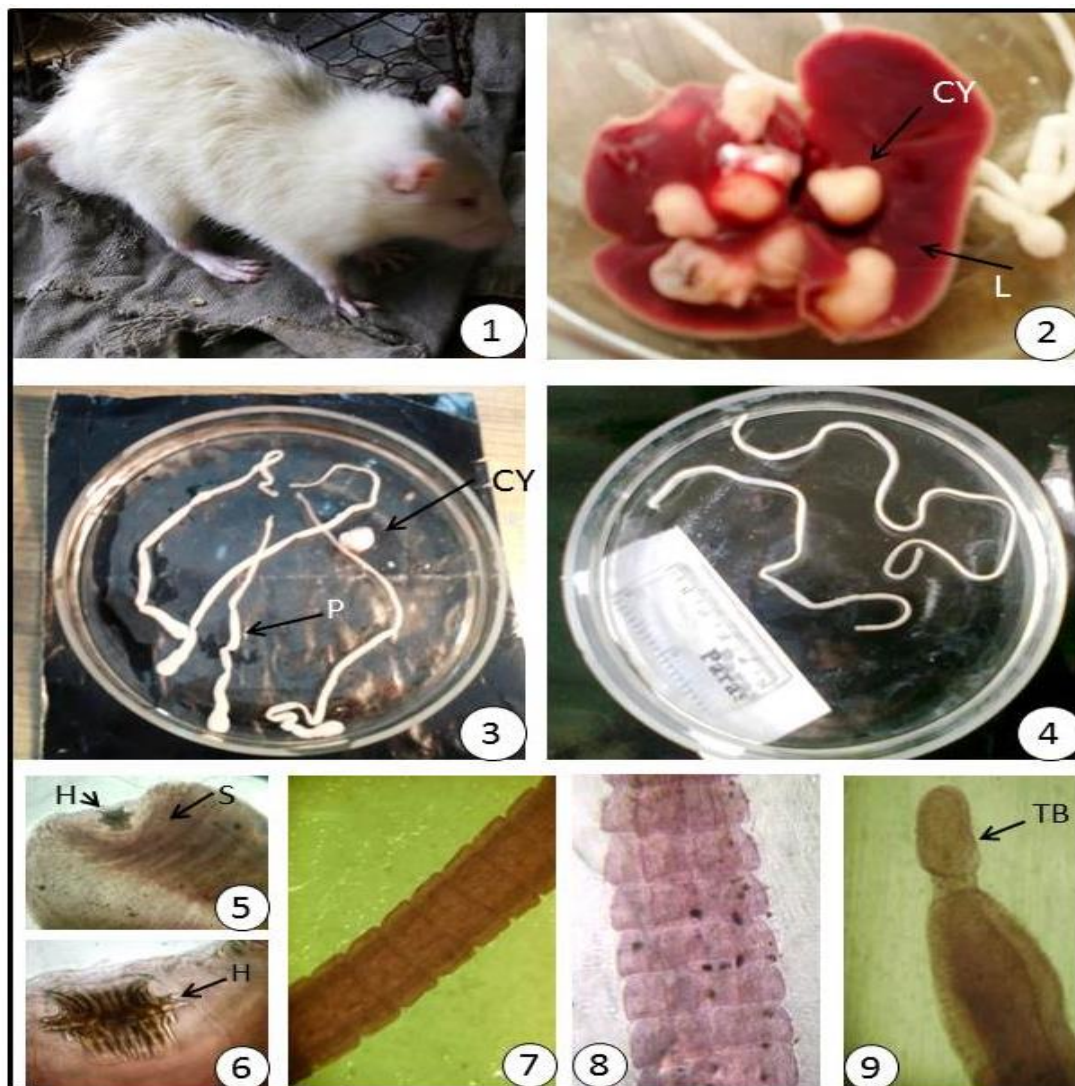


Plate 1:

**Figure 1: Photograph of Albino-rat.**

**Figure 2: Photograph of liver (L) lobe showing cysts (CY) containing *Cysticercus***

**Figure 3: Photograph of *Cysticercus* (P) taken out of cysts and a cyst (CY)**

**Figure 4: Photograph of *Cysticercus* with scale**

**Figure 5: Photomicrograph of Scolex of *Cysticercus*-100X**

**Figure 6: Photomicrograph of Scolex showing hooks (H)-400X**

**Figure 7: and 8-Photomicrograph of middle segments strobila-100X**

**Figure 9: Photomicrograph of posterior portion with tail-bulb (Tb)-100X**

## RESULTS AND DISCUSSION

Among 30 rats of 150-300gm, brought for different experiments, 6.6% were with symptoms like distended abdomen, lethargy, norexia etc and were with 5-10 creamish white fluid containing cysts in liver (Figure 1 and 2). Each cyst was about 5-8mm in diameter and found containing one *Cysticercus* larva (Figure 3). *Cysticercus* larva of *Taeniataeniaeformis* is strobilocercus in real sense (Smyth, 1996).

Each larva tapeworm was long; flat measuring 12.0-21.0 (16.67 $\pm$ 1.059cm) in length and 2-3mm in width (Figure 4) containing invaginated scolex at anterior end in most of the cases (Figure 5). Scolex bears characteristic taenoid hooks arranged in two rows and 4 suckers (Figure 6). Scolex was followed by

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segmented strobila without internal organs (Figure 7 and 8) and posterior portion ends in a tail-bulb (Figure 9). Larval stage of parasite was diagnosed as per structure and pattern of Taenoid hooks.

*Taenia taeniaeformis* is a tapeworm found in intestine of members of Felidae family specially cats. This tapeworm uses rats and other rodents as secondary host where embryonated eggs reaches with contaminated food and via portal circulation comes in liver and forms cysts inhabiting a larval stage described as *Cysticercus fasciolaris*, *Hydatagera fasciolaris*, *Strobilocercus fasciolaris* in Literature (Al-Nazzar, 2009; Karim et al., 2010). The larva observed in present investigation appears similar to the *Cysticercus fasciolaris* of *Taenia taeniaeformis*. In rodent liver it has been suggested as harmless, but correlation of clinical signs like lethargy, weightloss, anorexia, distended abdomen with presence of tapeworm larvae in rat liver are suggestive of pathogenesis and ill health of rats which are commonly used as laboratory model for various bio medical researchers. Metastatic hepatic Sarcoma has been reported in rats due to infection of *Cysticercus* of *Taenia taeniaeformis* (Bullock and Curtis, 1928; Armando and Rovira, 2007; Karim, 2010; Kataronovski et al., 2010). Non specific clinical signs like decrease in serum cholesterol, increase in serum alanine aminotransferase, Sorbitol dehydrogenase, decrease in glucose and increase in peripheral blood neutrophils. Lymphocytes and Eosinophils were also found associated with infection (Armando and Rovira, 2007). Accidental cases of *Taenia taeniaeformis* infection have also been reported in man from Sri Lanka, Argentina, Czechoslovakia, Denmark etc. and possibility of Zoonosis cannot be ruled out and must be taken into consideration carefully (Ekanayaka et al., 1999; Shashi et al., 2013). Albino-rats are cultured for various investigations in life sciences as well as in Bio-medical sciences. For these purposes healthy and uninfected animals are the basic requirement. Unfortunately, treatment options have not been worked out in detail. Experimental studies suggest that “Praziquantel” is effective in killing adults as well as larvae (Eom et al., 1988; Jitendra and Somvanshi, 1995). Detailed study is needed regarding histology, treatment and vaccination perspective which will help the animal breeders as well as research workers to avoid misinterpretation of results for biological experiments.

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