*Onderstepoort J. vet. Res.*, 56, 203–204 (1989)

RESEARCH COMMUNICATION

# THE LEECH *BATRACOBDELLOIDES TRICARINATA* (BLANCHARD, 1897) (HIRUDINEA: GLOSSIPHONIIDAE) AS A POSSIBLE RESERVOIR OF THE RAINBOW TROUT PATHOGENIC *STREPTOCOCCUS* SPECIES

R. R. BRAGG[(1)], J. H. OOSTHUIZEN[(2)] and SHIRLEY M. LORDAN[(1)]

ABSTRACT

BRAGG, R. R., OOSTHUIZEN, J. H. & LORDAN, SHIRLEY M., 1989. The leech *Batracobdelloides tricarinata* (Blanchard, 1897) (Hirudinea: Glossiphoniidae) as a possible reservoir of the rainbow trout pathogenic *Streptococcus* species. *Onderstepoort Journal of Veterinary Research,* 56, 203–204 (1989)

A *Streptococcus* species biochemically and serologically identical to the rainbow trout pathogenic *Streptococcus* species was isolated from the internal organs of the fish specific leech, *Batracobdelloides tricarinata.* These leeches were obtained from Roodeplaat Dam, near Pretoria, in which rainbow trout do not occur. This is the first isolation of this bacterium from an environmental source not related to rainbow trout and it is proposed that this leech is a possible reservoir of the rainbow trout pathogenic *Streptococcus* sp. in South Africa.

## INTRODUCTION

Streptococcosis of rainbow trout was first diagnosed in South Africa in 1974 (Boomker, Imes, Cameron, Naudè & Schoonbee, 1979) and today it is probably the most serious disease of rainbow trout in South Africa (Bragg, Todd & Lordan, 1989a). Failure of antimicrobials to control a well established episode of streptococcosis (Bragg & Broere, 1986; Bragg, 1988; Bragg *et al.,* 1989a) has led to the exploration of other avenues of control. One approach is to try and identify vectors or reservoirs in the environment and try to eradicate these or at least prevent their entry into production ponds.

*Batracobdelloides tricarinata* was fortuitously identified as a possible vector or reservoir of the rainbow trout pathogenic *Streptococcus* sp. This leech has been found to be highly specific for freshwater fishes and has been found to feed readily on the sharptooth catfish *(Clarias gariepinus),* Moçambique tilapia *(Oreochromis mossambicus)* and goldfish *(Carassius auratus)* (Oosthuizen, 1989). This is a preliminary report on investigations of *B. tricarinata* as a possible vector or reservoir of the rainbow trout pathogenic *Streptococcus* sp.

## MATERIALS AND METHODS

Samples of *B. tricarinata* were collected from Roodeplaat Dam, near Pretoria in sterile glass bottles. A total of 20 individuals were collected and divided into those which had fed recently and breeding (non-feeding) adults to ascertain if there were any differences in the microflora of fed and unfed individuals. A total of 14 fed and 6 unfed leeches were obtained. Ten fed and 4 unfed leeches were each homogenised separately in 2 m*ℓ* sterile phosphate buffered saline (PBS). The homogenates were used to inoculate 14 bottles containing nutrient broth at a pH of 9,6 which had been supplemented with 160 μg/m*ℓ* oxolinic acid (Bragg, Todd, Lordan & Combrink, 1989b). The bottles were all incubated at room temperature for 48 h and then plated onto tetrazolium agar and incubated for a further 48 h (Bragg *et al.,* 1989b). All small red colonies on the tetrazolium agar were isolated onto blood tryptose agar (BTA) plates and serologically and biochemically identified (Bragg, 1988).

The remaining individuals were each placed into bottles containing nutrient broth at a pH of 9,6, which had been supplemented with 160 μg/m*ℓ* oxolinic acid. These samples were processed according to the method described above.

## RESULTS

A *Streptococcus* sp. biochemically and serologically (Bragg, 1988) identical to the trout pathogenic species was isolated from all of the homogenised samples of fed and unfed leeches. No *Streptococcus* spp. could be isolated from the surface of the leeches.

## DISCUSSION

There is no record of this leech feeding on rainbow trout *(Salmo gairdneri),* but the fact that the leech readily feeds on at least three fish species and not on aquatic invertebrates indicates a wide host range amongst fish (Ooshuizen, 1989). The geographical distribution of *B. tricarinata* in Southern Africa indicates that the leech is very wide-spread in the Transvaal but is absent in the trout waters of Natal or the Western Cape. This distribution corresponds with the reported incidence of trout streptococcosis (Bragg, 1986; 1987, unpublished data).

The failure to isolate the *Streptococcus* sp. from the surface of the leeches indicated that the *Streptococcus* sp. is possibly part of the natural gut microflora of *B. tricarinata.* It is thought that leeches lost the capacity to produce digestive enzymes during their evolution and this deficiency is compensated for by enzymes produced by symbiotic gut microflora (Jennings & Van der Lande; 1967; Sawyer, 1986). It is possible that this *Streptococcus* sp. performs this function in *B. tricarinata.*

The isolation of this *Streptococcus* sp. from the internal organs of *B. tricarinata* may be significant in the epidemiology of streptococcosis. There is no possibility that infected trout contaminated the leeches due to the fact that trout do not occur in Roodeplaat Dam. This is the first isolation of this *Streptococcus* sp. from a site not associated with rainbow trout and it would thus appear that the rainbow trout pathogenic *Streptococcus* sp. is not an obligate pathogen of rainbow trout. A similar *Streptococcus* sp. was isolated from the mud and a dead

[(1)] Fish Disease Unit, Veterinary Research Institute, P.O. Onderstepoort 0110

[(2)] Department of Zoology, University of Pretoria, Pretoria 0002

Received 12 May 1989—Editor

fresh water crab on a site with a history of streptococcosis (Bragg *et al.*, 1989a) but the significance of these isolations is questionable due to the fact that rainbow trout were stocked in this water source (Bragg *et al.*, 1989a).

As the leech has not yet been recorded to feed on rainbow trout, this will have to be established whereafter experimental work will be required to prove that leeches, carrying this bacterium can produce streptococcosis in rainbow trout.

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Printed by the Government Printer, Private Bag X85, Pretoria, 0001