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Key Points:

- The invertebrate bryozoan hosts of the Proliferative Kidney Disease (PKD) was cultured to study its nutritional preferences
- From on-site collection, two myxozoan parasites were isolated in the bryozoan colonies
- Rainbow trout exposed to one of the two myxozoans isolated developed PKD

Key Words:

Fish
Disease

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Development of prevention or control measures against salmonid proliferative kidney disease

Proliferative kidney disease (PKD) is an economically important parasitic condition - costing the trout industry over £1.25 million per annum in the UK alone - primarily affecting first season freshwater salmonid fish in areas of Western Europe and North America. The causative agent involved was originally known as PKX, denoting its uncertain taxonomic position in the phylum Myxozoa Grassé, 1970. Subsequent studies discovered that bryozoans - known colloquially as "moss animals" - acted as alternate hosts, and the organism was named *Tetracapsuloides bryosalmonae* and placed in the new myxozoan class Malacosporea Canning, Curry, Feist, Longshaw and Okamura, 2000.

The focus of the current study is to try to achieve fundamental progress towards the development of effective prevention and control measures against PKD. Preliminary work has involved the laboratory culture of the invertebrate bryozoan hosts. As few previous findings have been published regarding

suitable nutritional sources for these animals, over 50 species of algae and protozoa were screened to gauge their value as food to bryozoans. Several species were ascertained to be readily digested and these formed the basic diet for bryozoan colonies collected from trout farms in the south of England endemic with PKD.

Following collection from the sites, the bryozoan colonies were routinely monitored using dissecting and inverted microscopes. The development of two myxozoan parasites was observed within the colonies. Within the bryozoans *Fredericella sultana* and *Plumatella repens*, the myxozoan parasites *T. bryosalmonae* and *Buddenbrockia* sp. respectively were studied by means of light and electron microscopy. Successful transmission of PKD to rainbow trout exposed to material released from *F. sultana* demonstrated the value of the culture method in the maintenance and further investigation of PKD in the research scenario.

Investigations have also been carried out investigating the use of chemotherapeutic agents delivered in feed as a method of limiting clinical disease. This work carries on from that described in Aquaflow technical leaflet TL2002-060. Two further drugs found to be well tolerated in salmonids were examined as in-feed medications for PKD.

Further studies will further explore the relationship between host and parasite with particular emphasis on molecular and immunological techniques. Attempts will be made to demonstrate specific immune protection using crude vaccine preparations in rainbow trout. Further work will be carried out concentrating on potential chemotherapeutic agents, and the development of a novel quantitative assay will be attempted to gauge the efficacy of varying prevention & control strategies.

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