

Can feeding a prebiotic to rainbow trout improve body composition?

Harper Adams University
Research Note



Feeding prebiotics

Postgraduate student, **Alex Miles**, has been conducting research to examine the effects of feeding a prebiotic to rainbow trout.

Fish farming is increasing in importance globally and provides a good source of protein in the human diet. Rainbow trout are one of the main freshwater fish species farmed in the UK.

Prebiotics are generally types of **carbohydrate**, which encourage the growth of **beneficial gut bacteria** and can help prevent the growth of potentially harmful bacteria. **Galacto-oligosaccharides** (GOS) have a prebiotic effect. It is possible that prebiotics in rainbow trout diets could reduce the reliance on antimicrobials by enhancing gut health. Until now, little research on the use of GOS in diets for fish, such as rainbow trout and Atlantic salmon, has been conducted.

Study aim

This study (part of a larger project) aimed to evaluate the effects of feeding differing amounts of GOS, within a balanced diet, to rainbow trout (*Oncorhynchus mykiss*), on their body composition.



Methodology

The twelve-week study involved 1200 juvenile rainbow trout, evenly distributed throughout 12 tanks, and provided with four dietary treatments. These diets contained a range of GOS amounts. Various measurements were taken, including the length to weight ratio which affects the shape of the fish. Equipment in **the Princess Margaret Laboratories** was used to measure whole body crude protein, crude energy, fat content and ash (minerals) in the fish.

Outcomes

Changes in the body composition of the rainbow trout were obtained with differing levels of dietary GOS. In particular, the percentage of fat in the body increased as the dietary level of GOS increased, leading to a greater fish gross energy content. There was no difference in the length to weight ratio of the fish so the shape of the fish remained the same, which is beneficial for market requirements. Further research is investigating how these changes can be used to help improve practical fish nutrition and health.

Research programme

This research note outlines part of the research conducted by **Alex Miles**, Postgraduate student on the Master of Research in Aquaculture at Harper Adams University.

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Further information

Miles, A., Davies, S.J. and Mansbridge, S.C. 2018. Galacto-oligosaccharides: an investigation into dietary inclusion levels for rainbow trout (*Oncorhynchus mykiss*) for improved carcass characteristics. *Advances in Animal Biosciences*. 9(1) p 29.

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