

NOTICE OF PUBLICATION

AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM



RESEARCH REPORTS

Sustainable Aquaculture for a Secure Future

Title: Supplementation of Maca (*Lepidium meyenii*) Tuber Meal in Diets Improves Growth Rate and Survival of Rainbow Trout *Oncorhynchus mykiss* (Walbaum) Alevins and Juveniles

Author(s): Kyeong-Jun Lee, Konrad Dabrowski, and Jacques Rinchard
School of Natural Resources
The Ohio State University
Columbus, OH, USA

Carlos Gomez and Carlos Vilchez
Department of Nutrition, National Agriculture University
La Molina, Lima, Peru

Leszek Guz
Faculty of Veterinary Medicine
Agriculture University of Lublin
Lublin, Poland

Date: 15 February 2006 Publication Number: CRSP Research Report 04-A5

The CRSP will not be distributing this publication. Copies may be obtained by writing to the authors.

Abstract: Maca tuber meal is used in fish diet formulations in Andean trout culture and knowledge of its effects on fish growth is paramount to healthy human food production. In the first experiment with rainbow trout alevins (0.096 ± 0.002 g), starter diets were offered from first feeding until 15 weeks. We formulated high protein content (~60%) semi-purified starter diets supplemented with 0%, 5%, 10%, or 15% maca tuber meal (control, M-5, M-10, and M-15 respectively). The second feeding trial was conducted with juveniles (1.56 ± 0.02 g) fed one of three diets (control, M-15, and commercial) for 8 weeks. In the first experiment, fish fed M-10 and M-15 diets exhibited significantly higher growth rates than the other dietary groups. Survival was significantly improved in the groups fed diets supplemented with maca tuber meal (60.0–69.2%) in comparison with the group fed a control diet (21.7%). The second experiment showed a higher growth rate in the M-15 group compared with the control and a commercial diet fed group. Leucocyte numbers were increased by dietary supplementation of maca tuber meal. The findings of the present study suggest that a maca tuber meal inclusion at least 5% improves growth rate, feed utilization, immunity by increased leucocyte number, and survival of rainbow trout alevins and juveniles.

This abstract is excerpted from the original paper, which was in *Aquaculture Research*, 35:215–223.

CRSP RESEARCH REPORTS are published as occasional papers by the Program Management Office, Aquaculture Collaborative Research Support Program, Oregon State University, 418 Snell Hall, Corvallis, Oregon 97331-1643 USA. The Aquaculture CRSP is supported by the US Agency for International Development under CRSP Grant No.: LAG-G-00-96-90015-00. See the website at <pdacrsp.orest.edu>.