

Distinguished Researcher



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- **University:** Calgary, Canada
- **Project Title:** Recombinant carp growth hormone as

Abstract

Prof. H. Habibi, the Full Professor of Department of Biological Sciences, University of Calgary has 85 papers on Endocrinology, Biotechnology in the most referred journals of the world. He has won Grace Pickford Medal which is an International Award in Comparative Endocrinology. He has Participated in KIA with 5 projects on Endocrinology most important of which is mentioned above.

Advances in aquatic biotechnology and aquaculture would be necessary to meet the growing world demand for fresh water and marine fish products. An effective method of increasing production level would be through the enhancement of growth rate to reduce the time to produce market-size fish. Investigators have used two different approaches to enhance growth rate in cultured fish including production of transgenic fish species that over express growth hormone (GH) and treating fish with exogenous recombinant GH. The focus here is not the use of transgenic fish, but an alternative method using orally administered fish GH. The results demonstrate that administration of exogenous recombinant carp GH (cGH) would be a viable method to enhance growth rate in cultured fish. In these studies, he examined the idea that recombinant cGH can be used as a food supplement to improve growth rate in cultured fish. He successfully produced biologically active cGH using E-coli. Bacillus subtilis and canola plant and went on to develop a novel form of fish food containing an active form of fish GH. The specific application of this technology would be to increase growth rate and food conversion efficiency in cultured fish, using fish GH as food supplement. The orally administered cGH was demonstrated to be functional through an activity assay measuring induction of insulin-like growth factor-I and growth rate. Fish receiving diets supplemented with cGH exhibited significant increases in growth over controls. The orally administered recombinant GH was found to be absorbed rapidly through the fish gastrointestinal tract and disappear after a short time from the system. Examination of fish following completion of the study revealed no morphological abnormalities in animals receiving diet containing cGH. In these studies, no GH could be detected in the blood or any of the tissues of rainbow trout after 90 minutes of oral administration of GH, indicating rapid metabolic clearance rate and short half-life of circulating GH in fish. The overall findings provide information on the efficacy and safety of using GH as feed supplement to enhance growth rate in cultured fish which is an alternative method to the use of transgenic fish.