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VI Foro Regional de Acuicultura

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Use of growth hormone for development of brazilian aquaculture

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For that aquaculture to continue playing a leading role in Brazilian agribusiness scenario is necessary to enjoy the best areas for fish production, reducing the impact on new areas and the production costs. Studies using growth hormone (GH) in fish feed demonstrated a significant increase in growth rate, appetite, dominance and better feed efficiency. Linked to appetite, feed conversion, growth and lipase activity is released into the plasma and acts in some organs through its association with receptors (GHR) in membrane of target cells, triggering biological responses, and the most important may be those which encode for growth factors like insulin (IGF-1). Salmon (*Oncorhynchus nerka*, *Oncorhynchus kisutch*, *Salmo salar*), rainbow trout (*Oncorhynchus mykiss*), tilapia (*Oreochromis niloticus*) and Japanese flounder (*Paralichthys olivaceus*) (Table 1) are some of the species in which the use of GH obtained successful. Although some studies uses intraperitoneal and muscle injections and transgenic animals, the GH addition to the diet is the most viable method for commercial aquaculture because does not require an individualized management of farmed animals. Finally, the recombinant DNA technology appears as the best choice for GH use in Brazilian aquaculture, increasing the fish productivity per area and reducing the time of culture cycle.

Table 1. Effect of transgenic *Synechocystis* sp. PCC6803 containing flounder GH gene on survival, growth, feed intake and feed conversion ratio of flounder over 7-week growth period (average±SD) (Liu et al. 2008).

Control 1: fish fed with commercial diet; Control 2: fish fed commercial diet supplemented with 2.0% non-transgenic *Synechocystis* sp. PCC6803; LD: commercial diet with 0.5% transgenic *Synechocystis* sp. PCC6803; HD: commercial diet with 2.0% transgenic *Synechocystis* sp. PCC6803. Within columns, values with different letters are significantly different ($p < 0.05$).

Keywords: dramatically growth rate, feed efficiency, gh, genetic engineering, recombinant DNA.