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Abstracts

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GROWTH HORMONE RETROCONTROL IN RAINBOW TROUT (Onchorynchus mykiss): effect of starvation

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In order to study the Growth hormone (GH) feedback, two groups of rainbow trout (n=60) have been constituted. One group was fed, whereas the other was starved. After one month, the means of total body weight (BW) of the fish were 56.66gr for the fed and 50.62gr for the starved ones. Three sets of animals have been constituted from each group and fish received two intraperitoneal injections (48h apart) of:

-1) Bovine GH (which does not cross-react in chinook GH RIA; Le Bail et al ,1991)(2x1 μ g/gr BW)

-2) recombinant Human IGF-1 (1 μ g/gr BW + 0.5 μ g/gr BW)

-3) 0.9% NaCl (control).

Blood, pituitary and liver were collected 8, 20, 48 and 120 hours following the second injection.

Data for control fish show that condition factor (K), hepato-somatic index (HSI) were reduced in starved animals in comparison with fed fish, while serum endogenous GH levels were higher. These results emphasize the success of fasting. Both Bovine GH-injected fish (fed and fasted) exhibit a decrease in endogenous serum GH levels and hepatic free GH binding sites. No significant effect was observed on pituitary GH content. Conversely, rhIGF-injected fish (both starved and fed) demonstrate an increase but non significant effect on their endogenous GH levels, with a slight decrease of hepatic GH free binding sites. No alteration was seen on pituitary GH content. This contradictory effect of IGF-1 on endogenous serum GH levels is probably due to a delayed action of this hormone leading to hypoglycaemia, consequently to the massive dose injected.

This negative feedback of GH in fasted fish (which exhibit a decrease in serum IGFs) suggests at least a direct action of GH on its own secretion through other circuits than IGF-1 (probably through a complex network of neurotransmitters and neuropeptides at hypothalamus level and/or its direct action at pituitary level).