

THE EFFECT OF STRESS ON FISH FIGHTS AND GENE EXPRESSION

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Fish are common model organisms for behavioural studies in vertebrates. Zebra fish, rainbow trouts or sticklebacks are common for studying behaviour. Fish have the advantage that they are easy to keep in the lab and are cost effective as compared to mice and rats. They have been widely used in almost every research area such as cancer research, metabolic research, stress research, neuroscience and so on. In the present experiment, rainbow trouts were used as a model organism to study the effect of stress and aggression on activation of immediate early genes. The size difference between a small and big fish was less than 5% of their body weight. Fish were separated by a PVC wall & one-way see through mirror. Before social interaction, either the small fish or the big fish was allowed to see their counterpart for five minutes and then they were allowed to socially interact for 1 hour for 5 days. At the end of 5 days the fish were sacrificed for blood plasma and brains were collected and stored. The blood plasma was analysed for cortisol to determine stress level and brains were analysed for monoamines and gene expression. In another set of fish, brains were collected by using cardial perfusion, a technique where all the blood is pumped out of the heart before collection of the brain. These brains would be analysed for gene expression in different brain regions. The results for these experiments prove that in the stressed fish there is more expression of both certain genes and high expression of brain monoamines like nor-epinephrine and serotonin.