DECREASED AGGRESSION IN GONADECTOMIZED MALE FIGHTING FISH (BETTA SPLENDENS) SYSTEMATICALLY RELATED TO INCREASING LEVELS OF ESTROGEN.

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ABSTRACT

Male Siamese fighting fish (Betta splendens) engage in a stereotypic aggressive threat display when they view either another male fighting fish, or their own mirror image. Female Siamese fighting fish are less aggressive then males. Male aggressive behavior is promoted by increasing levels of 11-Keto testosterone and/or testosterone proportionate. Males of some fish species such as the three spined stickleback, blue gourami and sunfish remain aggressive following castration. Therefore, testosterone may not be required for maintenance of aggressive behavior. We were interested in whether the hormone estrogen contributed to lower levels of aggression in females.

Fish were presented with their mirror image for thirty seconds and rated for aggressive display. They were observed for ten trials interspersed with five five-minute inter-trial intervals. Both male and female fish were tested.

Following an initial aggression rating male fighting fish were gonadectomized. This eliminated any testosterone influence. Gonadectomized fish were then allowed to recover for five days, at which time they were injected with either telecost solution, or telecost solution as a vehicle for one of three levels of estrogen. Twenty-four hours were allowed for hormone absorption and the fish were again tested for aggressive display. Comparisons of aggressive displays were made between all levels of estrogen supplemented gonadectomized males, as well as between the aggression levels for these males and the aggression levels of intact female fish. Although still incomplete, the data suggests a systematic decline in gonadectomized male aggression as estrogen levels increase, perhaps to levels mimicking those of intact female fighting fish.