RESPONSE OF THE BEARDED CATFISH *Rhamdia sp* SUBJECTED TO INDUCED REPRODUCTION WITH PITUITARY OF CARP EXTRACT (EPC)

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RESUMEN

Este artículo presenta los resultados de la reproducción en cautiverio del barbudo *Rhamdia sp*, debido a su disminución en la zona del río Anchicayá, por la afectación de su hábitat. Se inició con una población base de 200 individuos por especie, que luego disminuyó. Los procedimientos utilizados se fundamentaron en las metodologías mencionadas por Woynarovic y Horvath (1983) y Chaparro (1994). Se demostró que el protocolo utilizado fue efectivo para la especie, ya que se logró obtener oocitos aptos para la fecundación y con un buen porcentaje de fertilidad.

Palabras clave: desove, horas grado, hormona e incubación.

ABSTRACT

The response of the South American Catfish Rhamdia sp. induction process, where both females and males were treated by hormone with 5.5 mg/kg (two doses: 0.5 and 5 mg/kg) and 1mg/kg (single dose) respectively extract pituitary of carp (EPC). Spawning occurred at 245 hours grade and the incubation lasted 19 hours, at which time the larva is freed from chorion.

Key words: spawning, hours grade, hormone, incubation.

INTRODUCTION

The catfish (*Rhamdia sp*) is a species that has diminished its presence in the area of the Anchicayá river due to the environmental affectation where it lives. This has been a consequence of the release of mud form a hydroelectric plant, located in the upper part of the river, and the introduction of solid waste that has provoked and important deterioration in the quality of the water where these organisms develop, whose habitat is coastal lagoons and creeks, with, principally, a soft bottom, shallow and low current.

The catfish is a species of which the riverine folk of the Anchicayá basin has been taking advantage of for their livelihood. In reality it constitutes a staple food for their diet, thus the importance of this fish, which also contribute to maintaining the equilibrium of this fluvial ecosystem, disturbed by human intervention.

Due to the fact that river fish do not reproduce in captivity, makes the use of hormonal treatments necessary to stimulate and preserve their reproduction. In this research was used as an induction substance, a second generation, pituitary extract of carp, EPC, getting as a result the release of the sexual products.

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The order of the Siluriformes, to which all catfish like the bearded catfish belong, has been studied little in Colombia, which necessitates the development of research about this genus in order to include it in aquaculture activity in the Pacific Region. A situation different to that presented in other species such as: *Pseudoplatystoma fasciatum* (Tiger Shovelnose Catfish), *Phractocephalus hemioliopterus* (South American Red Tailed Catfish), *Sorubim lima* (Duckbill Catfish), *Callophysus macropterus* (Vulture Catfish), *Leiarius marmoratus* (Sailfin Pimeloid), *Zungaro zungaro* (Gilded Catfish), *Pimelodus blochii* (Four-lined Pimelodus), *Pimelodus grosskopfii* (Capaz), *Eremophylus mutisii* (Capitán de la Sabana) y *Pimelodus pictus* (Tigrito) (Rodríguez y Mojica, 2005).

The *Rhamdia quelen*, the other species of the catfish that exists, has been the object of research, comparing the effect of pituitary extract of carp E.P.C and human chorionic gonadotropin H.C.G in the embryonic development reproduction (Ortega L, et al. 2005), at different temperatures (Paz W et al .2005) and embryonic and larval development. (Pereira. et al 2006).

In *Rhamdia sebae* there are studies about fish-farming (Arias y Aya. 2004), hormonal introduction (Velasco-Santamaría et al. 2004), comparison of the carp pituitary extract (Díaz, et al 2004), induction with Primogonyl (Gutiérrez, et al 2004), induction with Ovopel (Sotelo et al 2004).

METHODOLOGY

In this research the principals of conformation, maintenance of the group of reproductions and induced reproduction was handled.

Conformation and maintenance of the reproduction group

The individuals of the group were captured in the tributaries of the Anchicayá river and the river itself through a system of "catanga", artisanal form of fishing used in the Pacific rim which consists of a cylindrical basket, made of plant material, in which the organisms enter, attracted by bait, but cannot get out.

To avoid problems of genetic bottlenecking, a study was initiated with a base population of 200 examples per species, but these diminished for various circumstances, amongst them, the domestication which took place through fortnightly fishing to determine the state of maturity of individual. For the maintenance of these various inconveniences had to be overcome, principally the feeding, due to the fact that species of different trophic levels were managed and the acceptance of balanced food of commercial type of protein level 30 required a period of adaptation on the part of the specimens.

Another inconvenience was the establishment of feeding protocols, due to the fact that the examples captured were brought from water with different physical conditions to that in which they would be maintained in the research center, principally in reference to temperature. When this inconvenience was overcome, it was possible to work with the individuals without any major problems.

Process of reproductive induction

The identification of sexual maturity is based on an external revision of the animal, looking for a bulging of the abdomen and the coloration of the papilla. The confirmation of an advanced state of maturity is obtained by applying slight pressure on the abdomen, in the direction front-to-back (Photo 1 and 2). The procedures used are based on the methodologies mentioned by Woynarovic y Horvath (1983) y Chaparro (1994).

If the animals release sexual products (eggs or sperm) they were taken to the laboratory, where they were weighed and measured for the calculation of the dosage, and they were also placed en different reproductive tanks, depending on sex, to facilitate the moment of induction.

In order to get the mature individuals to release the sexual product they were administered E.P.C, with the application of a preparatory doses, females received 0.5 mg/kg and definite doses of 5 mg/kg in a period of 12 hours. To the males was applied a onetime dose of 1 mg/kg, which coincided with the second dose of the females. In this moment the specimens of the two sexes were placed in the same tank, in a proportion of 1 female to 3 males. (Photo 3).

Photo 1. Mature female. By: Sandra Lamouroux. 2007.

Photo 2. Mature male. By: Sandra Lamouroux. 2007.

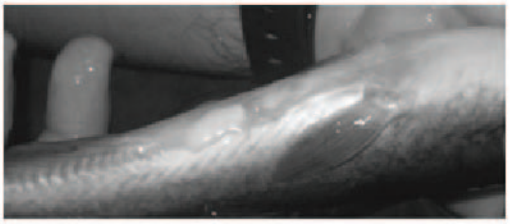


Photo 3. Process of artificial induction. By: Sandra Lamouroux. 2007.

Photo 4. Larva freed from the chorion. By: Sandra Lamouroux. 2007.

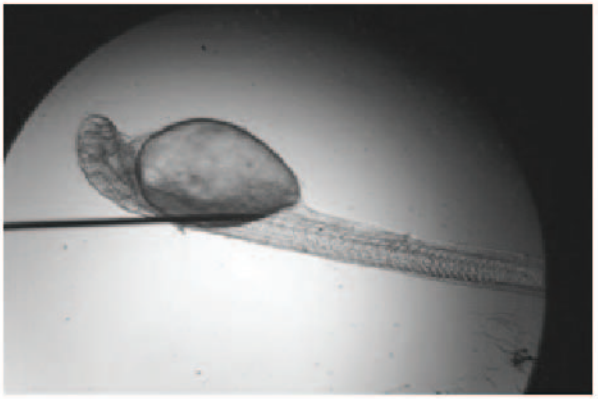
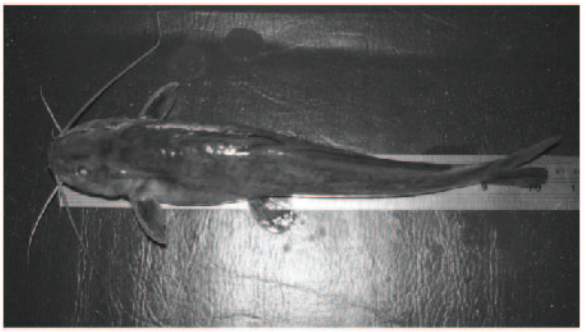


Photo 5. Barbudo *Rhamdia sp*. By: Sandra Lamouroux. 2007.



Process of spawning fertilization

The process of spawning was semi-natural, which consists in leaving the animals to release the sexual product in the reproduction tank and fertilization of the selected individuals is achieved.

Process of incubation

Incubation took place in ascending flow incubators of the Woynarovich type, where the fertilized eggs are deposited with a flow of 0.2 lt/sec, until the larva broke the chorion (photo 4).

Additionally, during the reproductive processes there were variables taken into account such as temperature and pH, with the aim of correlating them with the diverse reproductive phases and the effects in the survival of the organisms.

RESULTS

The results of the reproductive processes were the following:

The males and females weighed 200± 40 and 207 ± 95 g, respectively, having a semi-natural spawning at 245 hours degree after the second dose. The period of incubation was 19 hours, moment in which the release of the larva from the chorion was produced. The temperature was 26.5 ± 0.5 ºC and a pH of 6.5

CONCLUSIONS

The induced spawning of the bearded catfish (*Rhamdia sp*), through pituitary carp extracts (EPC), was positive, showing equally that spawning through extrusion was negative, not achieving the fertilization of the sexual products, while the semi-natural spawning did achieve the expected results.

It was observed that the morula stage happens between 30 and 40 minutes post-fertilization, the cephalic and caudal differentiation takes place close to 8 hours post-fertilization and the hatching of the larvae takes place at around 19 hours.

The bearded catfish are born blind and with a big yolk.

As a result of this research it was shown that females and males do not present differences in relation to their weight.

The protocol used was effective for the species since it was possible to achieve appropriate oocytes for the fecundation and with a good percentage of fertility, which allows for the increase of the population of these individuals in the Anchicayá river and the possibility to use a the previously described method as a formula for its reproduction.

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