International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Induced Breeding (Hypophysation) in Murrel Channa Straitus

Badawath Govind Kumar[1], Dharavath Ram Kumar[2], Bhukya Saikumar[3]

[1]Research Scholar, Central Research Lab
[2]Lecturer, Government Degree & PG College (Autonomous), Siddipet, Telangana
[3]Student, Government Degree & PG College (Autonomous), Siddipet, Telangana

Abstract
Producing fish to spawn by artificial methods is called induced breeding.Channa straitus are induced to spawn by the injection of pituitary extract, a process called Hypophysation.Hypophysation is a technique of induced breeding in Channa straitus by injecting pituitary gland extract. In hypophysation, the pituitary gland extract is injected into intramuscular/pectoral fin region of fish. The gland induces the fish to breed.When the pituitary gland of the same species is used, the hypophysation is called homoplastic. Induced breeding is practised in a wide variety of species, with Hypophysation we can get pure seeds in large number in all seasons. With this technique we can produce hybrid varieties of species. This technique shows high fertilization rate(~85%) and Hatching rate (~80%) this study explodes about procedure and result of hypophysation technique.

Keywords: Pituitary gland, Channa straitus, Fertilization, Hybrid varieties, Homoplastic.

INTRODUCTION

Channa striata, the striped snakehead, is a species of snakehead fish. It is also known as the common snakehead, chevron snakehead, or snakehead murrel and generally referred simply as mudfish. The major problems with culture of stripped murrel are non-avalibility of hatchery seed, commercial feed and inherent problem of cannibalism(War and altaf, 2014, Yadav et, al, 2016a, Hein et, al,. 2017)the global population is increasing and, in order to maintain at least the current level of per-capita consumption of aquatic foods (20.2 kg in 2020, FAO, 2020), total fisheries and aquaculture production reached all time record of 214 million tonnes in 2020, slight increase (3%)from the previous 2018 record (213 million tonnes).Channa striatus is also a subject of renewed interest in Malaysian folk medicine in the search for a better cure for diseases and ailments. Amino acids and fatty acids, found in high concentrations in the fish, might have contributed to its pharmacological properties. (Musikasinthorn, 2004) Channa striata is a predacious, ambush feeding fish that has a carnivorous - specifically piscivorous - diet. It is a generalist species that preys on any available source of food that is attainable. Murrels also exhibits Cannibalism to overcome from Cannibalism we have to grade the murrels depend on their size.

MATERIALS & METHODS

Materials required

Healthy Murrel fish, Acetone, Sterile blade, syringe, Distilled water, Cotton, Centrifuge, alcohol.

Method

This research study done at Government Degree and PG College (A), Siddipet (Department of M.Sc Fisheries) of Telangana state. This paper presents around four month study i,.e from (march-2023 to July-2023)

Hypophysation involves the following steps:

1. Collection of pituitary gland
2. Preparation of pituitary extract
3. Selection of breeders
4. Injection of pituitary extract
5. Breeding
6. Hatching

1. Collection of Pituitary Gland

In the first step in hypophysation is the collection of pituitary gland. The gland is collected from maturemurrel(Channa straitus) fishes The pituitary gland is located on the ventral side of the brain. Then the head is dissected out to expose the brain. The pituitary gland is isolated from the ventral side of the brain. The pituitary glands are stored in alcohol for better use.

2. Preparation of Pituitary Extract

The glands are macerated in a tissue homogenizer with a little distilled water. The homogenate is diluted with distilled water. The preparation is centrifuged at about 1000rpm for 5 minutes. The supernatant is the pituitary extract. It is preserved in glycol.

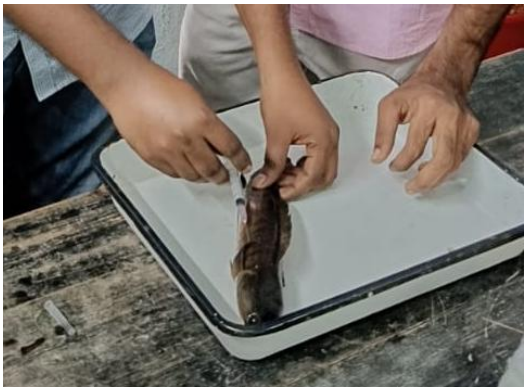
3. Selection of Breeders

Mature males and females are selected and stocked for hypophysation. Two males and one female form one unit for hypophysation.

Ratio of Male and Female is 2:1

4. Injection of Pituitary Extract

The selected males and females are kept on a table, the extract is injected intramuscularly at the base of the pectoral fin or pelvic fin or caudal fin.About 0.5 to 2ml of extract is given for breeders weigh-ingupto 10 kg.The female is given two doses, namely the first dose is preparatory dose and second one resolving dose. about 4 hours interval is given between the two doses. The male is given only one dose.



5. Breeding

After injection of the pituitary extract the breeders are introduced into a breeding hapa.The breeding hapa is a rectangular mosquito net cloth enclosure. The breeding hapa is built at our college premises. It issuspended in a pond water with the help of four poles. To provide the running water similar to river conditions is maintained in the hapa with the help of electric motors. the breeders mate in the hapa. They breed in 14-17 hours.

6. Hatching

In 18-25 hours, the eggs are fertilized. The fertilized eggs are transferred to a hatching hapa which is at our PG Department.The hatching hapa is made up of two rectangular mosquito nets. It is suspended in water.The hatching hapa consists of an inner hapa and an outer hapaThe eggs are hatched in the inner hapa.Thehatchlings wriggle out through meshes of theinnerhapa and reach the outer hapa.

Fertilization rate=Number of fertilized eggs/Number of estimated eggs x 100

The shells and dead eggs present in the inner hapa a are removed.The hatchlings are kept in the outer hapa for three days Then they are transferred to nursery ponds at behind our college premises in cementtanks. And reared the seeds till they attained fingerling stage , while rearing the seeds the murrel exhibited cannibalism to overcome the cannibalism the murrels have divided based on their with the help of net.

Result & Discussion

Induced breeding with Hypophysation we can get pure seeds in large number in all seasons. With this technique we can produce hybrid varieties of species. This technique shows high fertilization rate(~85%) and Hatching rate (~80%) this study explodes about procedure and result of hypophysation technique. Here we can get best quality of fish seeds

Conclusion

The breeding technique is most effective where we can get desired quality of seeds with almost same size so that we can get huge crop by culturing the murrels with almost same size cannibalism is avoided, the survival rate of murrel is so high.

Acknowledgement
I express my deep sense of gratitude to supervisor Dr.P.Ayodhya Reddy sir, HOD Zoology & Fisheries-Government Degree and PG College (A) Siddipet, my sincere thanks to Dr.T.Jagadeeshwarachari sir Assistant professor of Zoology © Government Degree and PG College (A) Siddipet, Telangana, India 502103.

REFERENCES

1. Chaudhry, S.; de Alwis Goonatilake, S.; Fernado, M.; Kotagama, O. (2019). "Channa striata". IUCN Red List of Threatened Species. 2019: e.T166563A60591113. doi:10.2305/IUCN.UK.2019-3.RLTS.T166563A60591113.en. Retrieved 19 November 2021.
2. ^ Courtenay Jr.; Walter R. & James D. Williams. "Snakeheads (Pisces, Channidae): A biological synopsis and risk assessment". U.S. Geological Survey.
3. https://www.researchgate.net/publication/344632339_Induced_spawning_and_embryonic_development_of_striped_murrel_Channa_striata_Bloch_1793_in_indoor_conditions_with_sGnRH_analogue
4. Performance of Domesticated (Vietnamese) versus Nondomesticated (Cambodian) Snakehead, Channa striata (Bloch 1793)
5. https://www.researchgate.net/publication/285953667_Induced_spawning_of_the_striped_murrel_Channa_striatvs_using_pituitary_extracts_human_chorionic_gonadotropin_luteinizing_hormone_releasing_hormone_analogue_and_ovaprimR
6. https://www.researchgate.net/publication/266376729_Preliminary_results_on_induced_spawning_of_pond-raised_Mahseer_Tor_Khudree
7. https://www.researchgate.net/publication/348035533_Induced_Breeding_of_Rainbow_Snakehead_Channa_bleheri_Vierke_1991_Under_Captive_Condition
8. https://www.researchgate.net/publication/330828935_A_New_Species_of_Dwarf_Channa_Teleostei_Channidae_from_Meghalaya_Northeast_India
9. https://www.researchgate.net/publication/328838656_The_snakehead_fish_Channa_aurolineata_is_a_valid_species_Teleostei_Channidae_distinct_from_Channa_marulius
10. https://www.researchgate.net/publication/340875802_Induced_Breeding_of_Murrel_Channa_striatus_using_various_inducing_agents