

Aquaculturell

Prof. Dr. Hasan Hüseyin ATAR

SPAWNING

- At present, two major techniques are employed in the mass-production of marine finfish fry in Southeast Asian countries: artificial fertilization and induced spawning.



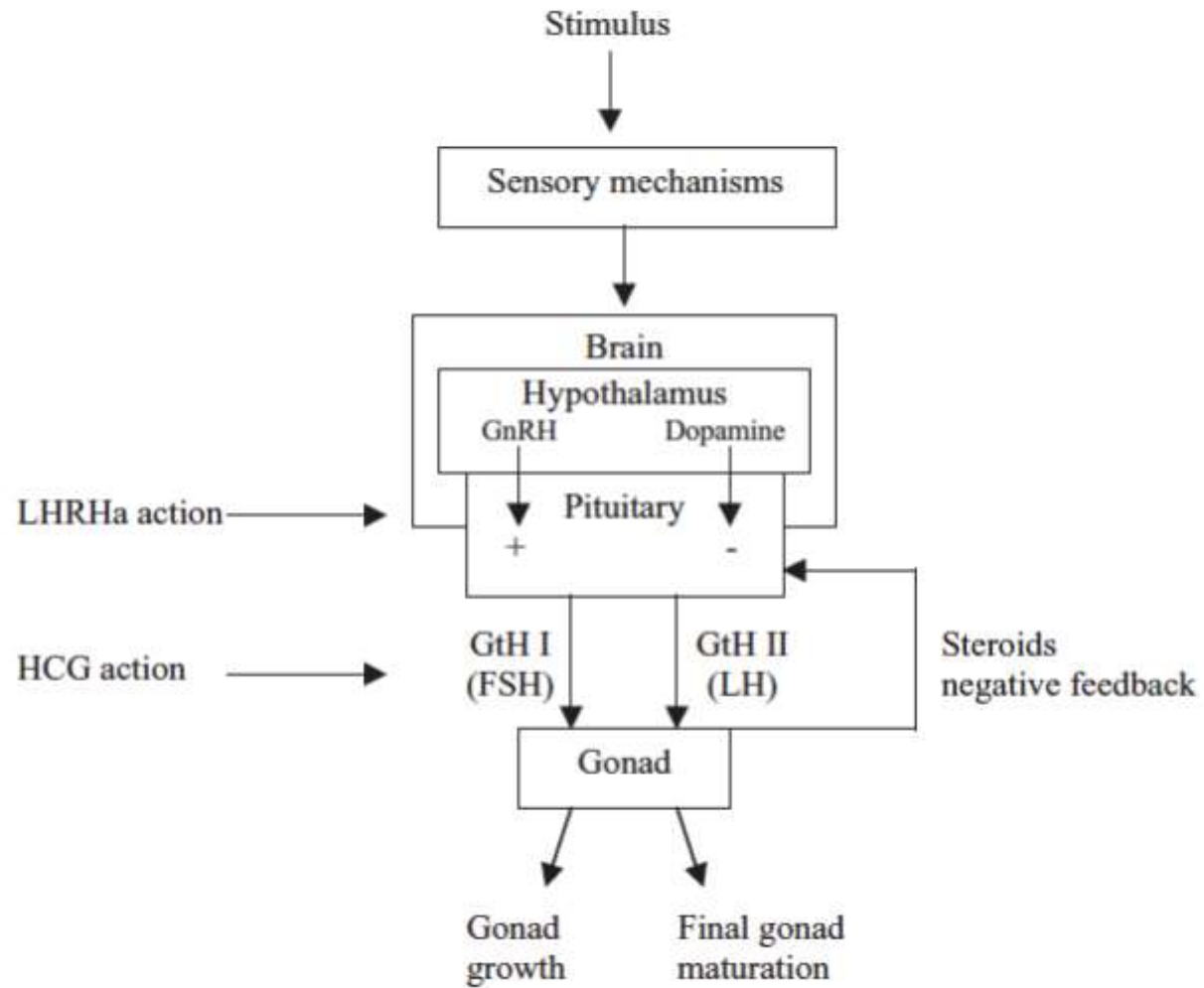
- The sexes in cultured fish are separate and their paired gonads are located dorsolaterally in the body cavity. Reproductive activity is confined to a particular season of the year. Reproduction is usually triggered by environmental cues, such as increase in day length or water temperature (in temperate and tropical species), or changes in salinity or turbidity (in tropical species). These cues trigger hormonal changes within the animal brought about by stimulation of the pituitary gland.

- Artificial fertilization

- Spawners are caught in natural spawning grounds near the mouth of rivers or in saltwater lakes. The degree of maturity of the collected spawners is immediately checked.
- The dry method of fertilization is normally used. The eggs are stripped directly from the female into a dry and clean container where the milt is added. A feather is used to mix the milt and eggs for about 5 minutes. Filtered seawater is added to the mixture while stirring, and it is then allowed to stand undisturbed for 5 minutes.
- The fertilized eggs are then transported to the hatchery for subsequent hatching.

- Induced spawning by hormone injection

- In induced spawning, the hormones used include the following:
- SPH - acetone dried pituitary gland homogenate of coho salmon prepared by the British Columbia Research Council, Vancouver, Canada; 1 g powder contains 17.6 mg gonadotropin.
- HCG - human chorionic gonadotropin, manufactured by Ayerst Laboratories, New York.
- Before injection, HCG is dissolved in 3 ml of its accompanying diluent. The solution is then used to homogenize the acetone dried pituitary gland of salmon to be used for induced spawning.





- Fishes with eggs of an average diameter equal to or more than 0.65 mm are induced to spawn by injecting hormones intramuscularly a few centimetres below the dorsal fin. In the first injection, the fish is given a combination of 10 mg SPH/kg body weight + 1 000-10 000 IU HCG/kg body weight. In the second injection, the fish is given a combination of 10 mg SPH/kg body weight + 2 000-20 000 IU HCG/kg body weight. Injections are administered intramuscularly a few centimetres below the dorsal fin after which the fish is completely anaesthetized by immersing it in seawater containing 100 ppm 2 - phenoxyethanol.

- The time-interval between injections is 24 hours for wild milkfish. This interval was selected to ensure that final maturation of eggs is completed before the fish dies or before the eyes of the breeders are completely covered with a white opaque substance.
- Usually, only two injections are needed to induce both captive and wild adult fish to spawn, as long as the dosage and time-interval mentioned above are respected; however, badly injured fish may need a third injection. In such cases, the dose used in the third injection is that of the second injection. When a third injection is necessary, the fertilization and hatching rates are usually very low.