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Bighead carp - *its maturation and ovulation*

Combined LHRHa+domperidone can effectively replace the existing injection protocol

Bighead carp, *Aristichthys nobilis*, is the most popular cultured carp in the Philippines. Attaining the size of 1 kg in 4-6 months without supplemental feeding in floating cages and pens, the fish matures sexually in 2 years. The highly turbid condition in the lake, carried by the continuous mixing and resuspension of sediments in the water column do not adversely affect the growth and sexual maturation of bighead carp. Although they mature and remature the whole year round under cage conditions, bighead carp do not spawn spontaneously.The fish is induced to spawn by hormone injection.

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This paper won the author, the best paper award in the Fisheries and Aquatic Resources Category during the 1992 DA-BFAR National Research Symposium.

The use of synthetic luteinizing hormone-releasing hormone (LHRH-a) stimulates oocyte maturation and ovulation in several finfishes, however, this hypothalamic decapeptide alone did not induce ovulation in common carp.An injection of a dopamine antagonist (domperidone or pimozide was required to induce oocyte maturation and ovulation in some cyprinids.

A study was conducted at SEAFDEC using twenty-one 3-4 year old female bighead carp selected from fish stocks reared in floating net cages in Laguna Lake.

The combination LHRHa and Domperidone using *Motilium* tablets dissolved in dimethyl sulfoxide) was compared to the existing injection protocol using HCG and LHRHa.

The findings revealed that a combination of LHRH-a and domperidone (*Motilium*) can effectively and sufficiently replace the existing injection protocol of HCG + LHRH-a to induce spawning of bighead carp. The lower combined cost of LHRH-a and domperidone will benefit carp hatchery operators as well as fish culturists in the Philippines through a reduction in cost of bighead carp fry and fingerlings.

Hydration response of oocytes in fish injected with HCG + LHRH-a and LHRH-a+DOM caused signficant increases in oocyte diameter of 7.5% and 7.0%, respectively.Carp injected with LHRH-a or DOM had an average oocyte diameter increases similar to the saline-injected fish.

The study indicated that injection with dopamine receptor antagonists such as pimozide and domperidone caused significant increases in serum GtH. Final oocyte maturation and ovulation in some cyprinids are induced by a preovulatory GtH surge similar to spontaneously ovulating goldfish.

Multiple injections of *Motilium* domperidone in (liquid form) which was needed to equal a 15 mg/kg-dose using the tablet form stressed the fish. Cost comparison indicated that the injection protocol using LHRH-a-DOM is more economical than combined HCG+LHRH-a. The 1992 cost estimate of hormone dosages per kg of bighead carp shows a combined cost of P68.25 (P22.80=US$1.00) for LHRH-a +DOM compared to P134.00 for HCG+LHRH-a. Motilium can be pruchased locally at P3.00/tablet of 10 mg domperidone. The 1992 prices for HCG ad LHRH-a distributed locally are approximately P650.00/10,000 IU and P850.00/Img, respectively. The use of low cost and locally available spawning agents such as domperidone (*Motilium*) can effectively reduce operational expenses in carp hatcheries.

Source: Fermin, AC. LHRH-a and domperidone-induced oocyte maturation and ovulation in bighead carp, Aristichthys nobilis (Richardson). Aquaculture 93 (1991) 87-94.