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The Improvement of Ovulation Stimulation and Egg Quality of Pawas Fish (*Osteochillus hasselti* CV) for Artificial Spawning Requirements in Seed Production

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Abstract

This study aims to determine the increase of ovulation stimulation and egg quality of Pawas (*Oseochilushasselti* CV) with ovaprim'sstimulifor artificial spawning requirements in baby fish production. The treatment were consisted of ovapriminjection P1= 0,4ml/kg body weight, P2= ovaprim injection of 0,5 ml/kg body weight, P3= ovapriminjection 0,6 ml/kg body weight, injection ovapriminjectionP4= 0,7 ml/kg body weight and P5= injection of 2 ml physiological saline 0,65%/kg body weight (as a control). The results showed that the best treatment for the improvement of ovulation of stimulation and quality of Pawaseggs'is P3= ovapriminjection 0,6 ml/kg body weight produced in a latency time of 6,15 hours, the total of eggs ovulation produced as much as 242 grains/g carrier, the egg increasementwas in diameter of 0,1925 mm , egg maturation was increase about 20% and its ovisomatik index value of 14,75%.

Keyword: Ovulation Stimulation, Egg Quality, Osteochillus hasselti, Artificial Spawning , Seed Production

INTRODUCTION

Pawasfish (*Osteochilushasselti* CV) is one of the economically important fish of 31 economically important fish species found in the waters of the KamparRiver, Riau. These fish can be consumed either in fresh form or in the form of processed (smoked fish) or better known with the term of*Salai fish*. To fullfil the public cosumtion for such fish especially in Kampar area and Riau District in generally; still solely obtained from catches in nature. Pawas fishing carried out by the fishermen during

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this time do not always pay attention to the size of the fish were caught, of catches in nature are not uncommon fish that have not spawned, will spawn and were spawning. When this is done continuously assumed that will disturbe the continuity that a time will be able to cause the extinction of fish species. The fish preservation of nature needs to be maintained, one way to do that is cultivating the next seeding like other fish farming. In running hatchery technology can be done through artificial spawning, but the artificial spawning success is highly depend on the quality of eggs produce from prospective brood to be cultivated, because the quality of the eggs that will either be able to produce seed as expected, both quantity and quality. Therefore, research on "Improvement Ovulation Stimulation and Egg Quality of Pawasfish (*Osteochilushasselti* CV) for Needs Artificial Spawning in Seed Production" this needs to be done which is an early stage research on hatchery technology.

STUDY AREA

The place and time of this research study was conducted in Hatchery and Breeding Laboratorium (PPI) Faculty of Fisheries and Marine Sciences, University of Riau, which lasts for 3 (three) months starting from April to July 2015.

METHOD

This study used a randomized block design full with 5 standard of treatment and 3 repetitions. The treatment consisted of ovaprim injection P1= 0,4 ml/kg body weight, P2= ovapriminjection0,5 ml/kg body weight and P3= ovapriminjection 0,6 ml/kg body weight, P4= ovapriminjection0,7 ml/kg body weight and P5 injecting 2 ml physiological saline 0,65%/kg body weight (as a control). The designof model used is:

$$\mathbf{Yij = \mu + \tau i + \sum ij}$$

where:

Yij : Results of individual observations that are subjected to-i and replicates
μ : common average
τI : Effect of treatment to-i
∑ ij : Effect of error treatment to –i repeat to –j

During maturation of stems test fish were fed pelleted shrimp + vitamin, feed given dose is 5% of body weight that contribute to the maturation process in accordance with the results of previous studies on fish astringent Siam fish (*Trichogasterpectoralis* Regan) (Sukendi, Putra and Nur'Asiah,2012) and astringent pearl fish (*Trichogasterleeri*Blkr) (Sukendi, Putra and Yurisman, 2012). Stimulating substances used are ovaprim (a solution of 10 ml of production Syndel Laboratory Ltd. Canada containing 20 mg and 10 mg sGnRH-antidopamine in each ml) (Nandeesha*et al.,* 1990. The observation parameters consisted of latency period, ovulation egg total, the increase in diameter eggs, the increasement maturity of the egg and ovisomatik indexvalue.

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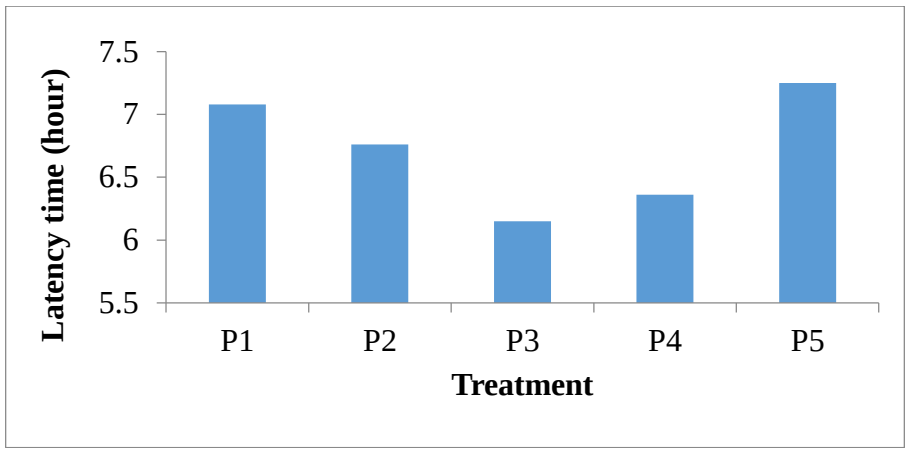
RESULTS

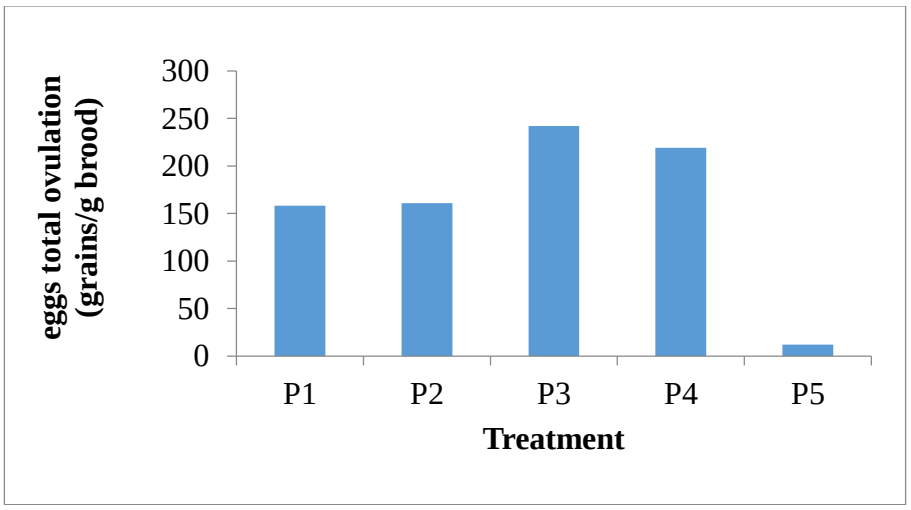
The results of analysis of variance (ANOVA) showed that the treatment given was highly significant (P<0,01) against the latency period, theovulation egg total, the increase in diameter eggs,the increasement maturity of the egg and ovisomatik index value.

1. Latency periodand EggsOvulationTotal

The smallest latency period sequentially were in treatment for 6,15 hours P3, P4 at 6,36 hours, P2 and P1 of 6,76 hours of 7,08 hours and P5 at 7,25 hours (Figure 1). From the test results further indicate that the treatment with P2, P3 significantly different (P<0.05), between the treatment of P1 and P3 to P5 highly significant (P<0,01). While the treatment with P2 and P3 between the P1 and P2 treatments P5 not significantly different (P>0,05).



(a)



(b)

Figure 1: Histogram of Pawas fish latency period (a) & Eggs egss total ovulation (b)

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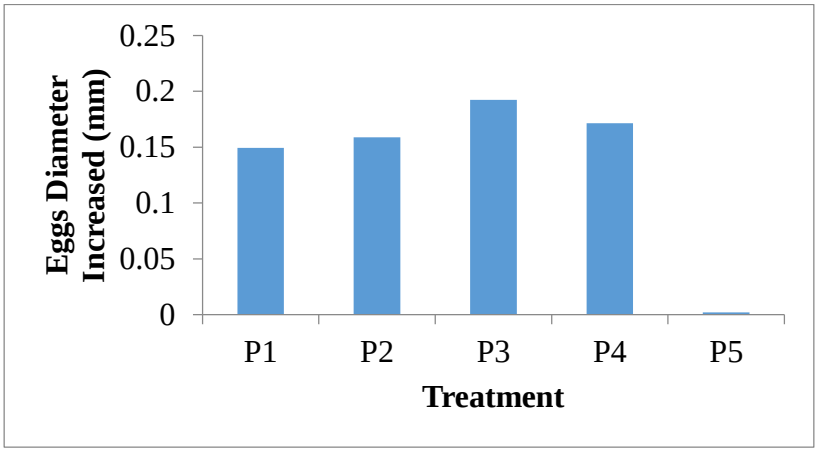
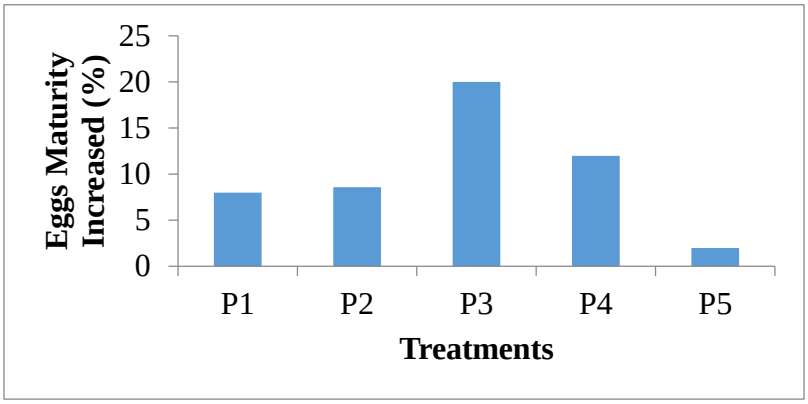
2. Eggs Diameter Increased and Eggs Maturity Increased



(a)



(b)

Figure 2. Histogram of Pawas fish eggs (a) and eggs maturity increased (b)

3. Ovisomatik Index Value

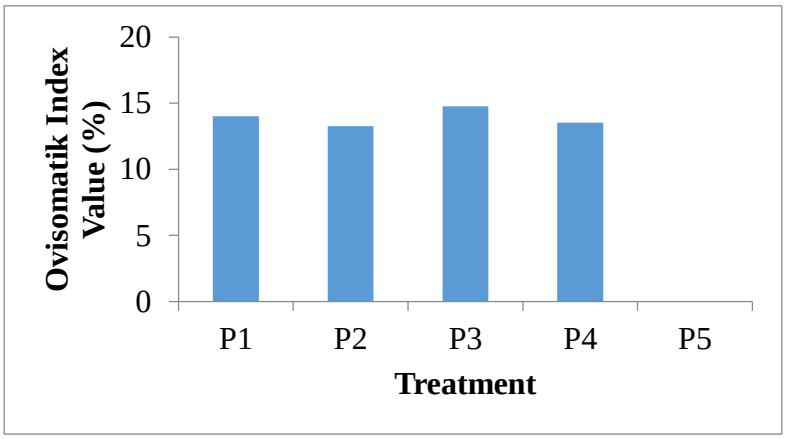


Figure 3. Histogram value ovisomatik index

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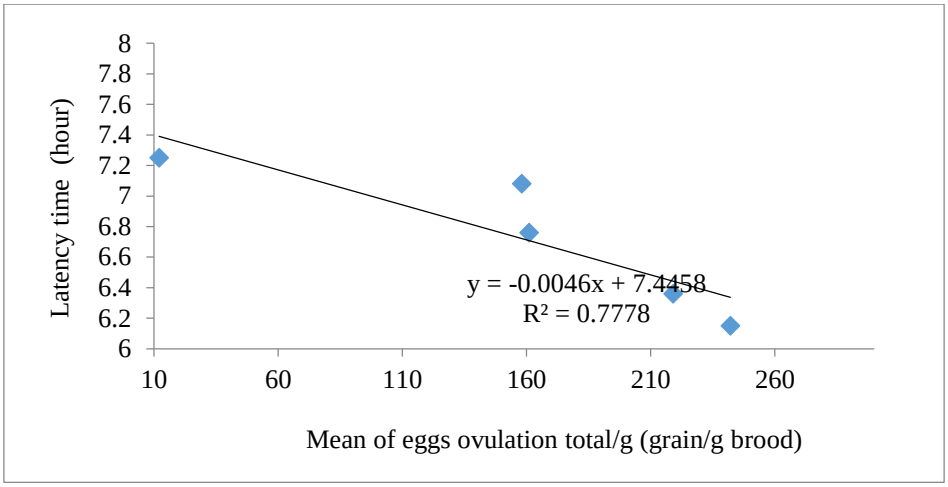
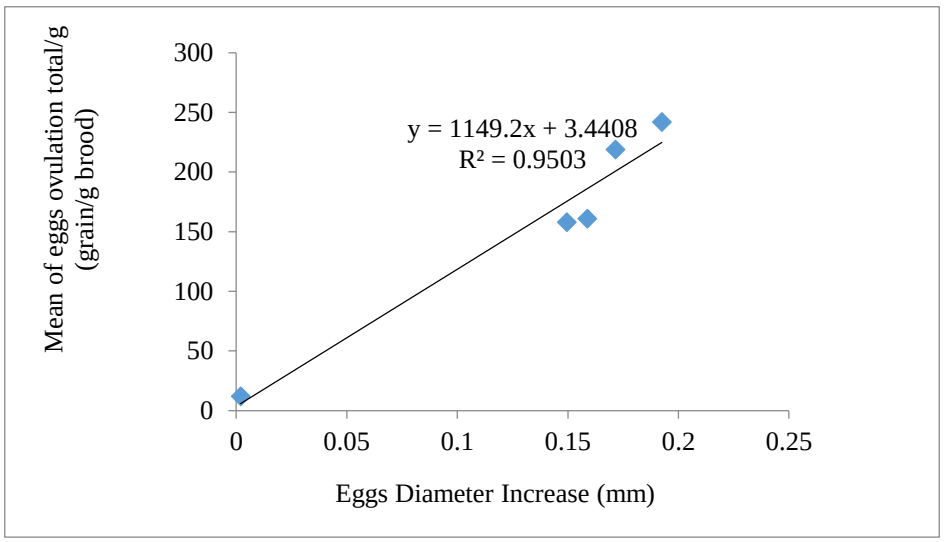
According Misdian (2010),ovisomatikindex value will be able to affect the frequency value of fishspawning, where the smaller ovisomatikindex value then the fish will always do the spawning, and vice versa. The size of ovisomatik index value is determined by the ratio of egg weight with the eggs ovulation weight of brood fish. From the measurement results of striping highest eggs total found in treatment P3 before the weight of the eggs will also be great on this treatment, its causing the ovisomatik index value will also be high. The relationship regression between the parameters measured during the study carried out can be seen in Figure 6



(a)



(b)

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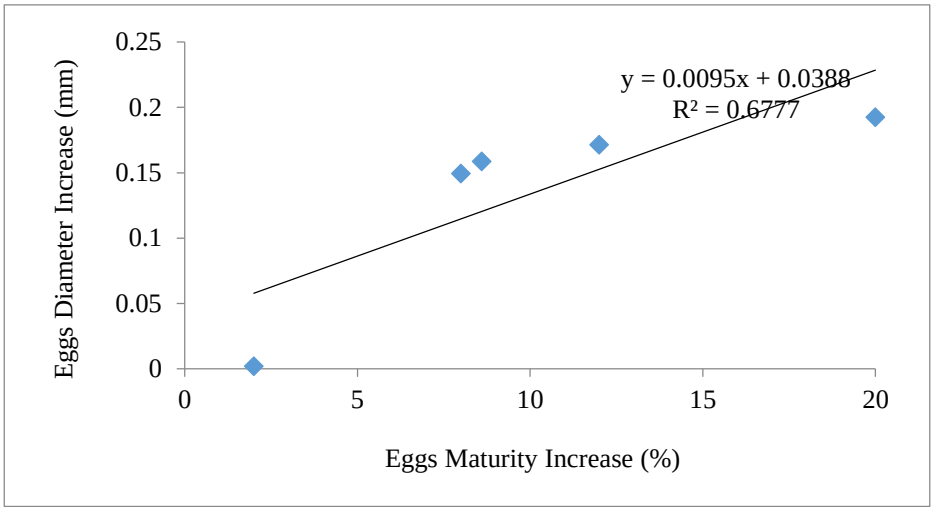
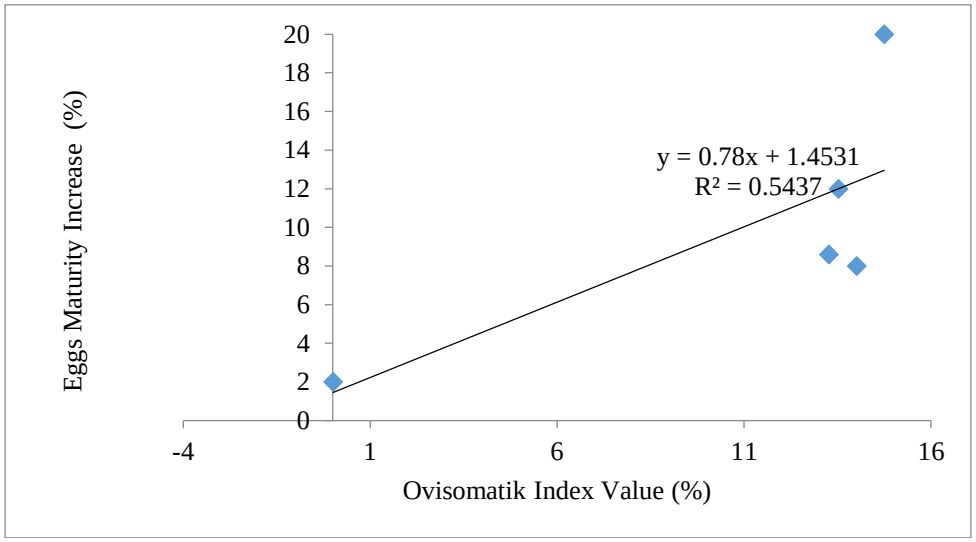


(c)



(d)

Figure 3. The relationship between the parameters of the latencytime and the eggs ovulation total (a), the relationship between the eggs ovulation total with the eggs diameter increased (b), the relationship between the eggs diameter increasementwith eggs maturity increasement (c), the relationship between the eggs maturity increasement with the ovisomatik index (d)

DISCUSSION

The treatment P3 is the best treatment to stimulate ovulation Pawas fish doing. This is in accordance with the content of ovaprim, where each 1 ml contains 20 mg sGnRHovaprim-a (D-Arg6, Trp7, Leu8, Pro9- NET)-LHRH and 10 mg of anti-

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dopamine (Nandeesha*et al.*, 1990 and Harker, 1992). In physiological GnRH analogues contained in ovaprim role stimulating the pituitary to release gonadotropin (Lam, 1985), whichunder natural conditions gonadotropin secretion are inhibited by dopamine (Chang and Peter, 1982), so that when dopamine antagonist is prevented with the role of dopamine will be stopped and gonadotropin secretion increasement (Harker, 1992). Gonadotropin generated will go to the gonads and will accelerate the maturation of oocytes and then ovulation will occur.

Latency time obtained in this Pawas fish is smaller than the latency time of African catfish (*Clariasgariepinus*Burcheel) dose of 0,5 ml ovaprim/kg body weight resulted in a latency time of 9,2 hours (Sukendi, 1995), baungfish (*Mystusnemurus* CV) ovaprim dose of 0,9 ml/kg body weight resulted in a latency time of 8,6 hours (Sukendi, 2001), kapiekfish (*Puntiusschwanefeldi*Blkr) ovaprim dose of 0,5 ml/kg body weight resulted in a latency time of 7,23 hour (Sukendi, Putra &Yurisman, 2006), Motan fish (*Thynnichthysthynnoides*Blkr) ovaprim dose of 0,7 ml/kg body weight resulted in a latency time of 6,58 hours (Sukendi, Putra and Yurisman, 2009) and senggaringanfish (*Mystusnigriceps* CV) ovaprim dose of 0,7 ml/kg body weight resulted in a latency time of 6,37 hours (Sukendi, Putra and Nur'Asiah, 2014), but larger than selais fish (*Ompokhypophthalmus*) ovaprim dose of 0,5 ml/kg body weight resulted in a latency time of 6,00 hours (Putra, Sukendi and Yurisman, 2010).

Total eggs ovulation (P3) of this Pawas fish is much more than fish of African catfish (*Clariasgariepinus*Burcheel) ovaprim dose of 0,5ml/kg body weight to produce the eggs total ovulation as much as 9274 grains/brood, (Sukendi, 1995), selais fish (*Ompokhypophthalmus*) dose of 0,5 ml ovaprim/kg of body weight to producesthe eggs total ovulation as much as 3671 grains/brood (Putra, Sukendi and Yurisman, 2010) and senggaringan fish (*Mystusnigriceps* CV) ovaprim dose of 0,70 ml/kg body weight produces in egss total ovulation as much as 7733 grains/kg brood. But it is smaller than the baungfish (*Mystusnemurus* CV) ovaprim dose of 0,9 ml/kg body weight to produce the eggs total ovulation as much as 24.635 grains/brood (Sukendi, 2001), kapiek fish (*Puntiusschwanefeldi*Blkr) dose of 0,5 ml ovaprim/kg of body weight to produce the eggs total ovulation as much as 26.200 grains/brood, (Sukendi, Putra and Yurisman, 2006) and motanfish (*Thynnichthysthynnoides*Blkr) ovaprim dose of 0,7 ml/kg body weight to produce the eggs total ovulation 15.067 grains/brood (Sukendi, *et al*., 2009).

Best treatment P3 to improve the increasementthe eggs diameter showed that the addition can shorten the latency time; multiply the eggs ovulation total can also improve the increasement in diameter of eggs.Eggs diameter increasement is smaller than the diameter increasement of eggs African catfish (*Clariasgariepinus*Burcheel) ovaprim dose of 0,50 ml/kg body weight resulted in the increasement in diameter of eggs 0,118 mm (Sukendi, 1995), baungfish (*Mystusnemurus* CV) ovaprim dose of 0,9 ml/kg body weight led to the expansion of 0,144 mm eggs diameter (Sukendi, 2001), kapiekfish (*Puntiusschwanefeldi*Blkr) dose of 0,5 ml ovaprim/kg body weight led to the expansion of 0,140 mm eggs diameter (Sukendi*et al*., 2006), Motan fish

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(*Thynnichthysthynnoides*Blkr) ovaprim dose of 0,70 ml/kg body weight led to the expansion of 0,180 mm eggs diameter(Sukendi*et al*., 2009) and selais fish (*Ompokhypophthalmus*) ovaprim dose of 0,50 ml/kg body weight resulted the eggs diameter increased of 0,23 mm (Putra*et al*., 2010).

The eggs maturity increasement obtained outweight the maturity percentage of baungfish (*Mystusnemurus* CV) ovaprim dose of 0,9 ml/kg body weight resulted in accretion of 9,00% egg maturation (Sukendi, 2001), kapiekfish (*Puntiusschwanefeldi*Blkr) ovaprim dose of 0,5 ml/kg body weight resulted in accretion egg maturation of 18,67% (Sukendi*et al*., 2006), motan fish (*Thynnichthysthynnoides*Blkr) ovaprim dose of 0,7 ml/kg body weight led to the expansion of eggsmaturity 17% (Sukendi, Putra and Yurisman, 2009) and selais fish (*Ompokhypophthalmus*) ovaprim dose of 0,5 ml/kg body weight resulted in accretion maturation of eggs by 20% (Putra*et al*., 2010).

Ovaprimwhich is given has the same function with GTH I and GTH II in the final stages of oocyte maturation in the ovaries. Kuo*et al*.,(1974) suggest that oocyte maturation occurs in a short time just before ovulation. According Nagahama (1983) GTH I contribute to increase the secretion of estradiol -17βwhich in turn stimulate the synthesis and secretion of vitelogenin, while GTH II acts stimulating final maturation process. In accordance with the content of ovaprim which has been stated previously, in which each 1 ml contains 20 mg sGnRHovaprim-a (D-Arg6, Trp7, Leu8, Pro9-NET) - LHRH and 10 mg of anti-dopamine (Nandeesha*et al*., 1990 &Harker, 1992).

CONCLUSIONS

From the results obtained it can be concluded that the best treatment to increase ovulation stimulation and eggs quality of Pawasfish is ovaprim injection treatment with a dose of 0,60 ml/kg body weight, resulted in a latency time of 6,15 hours, eggs ovulation total as much as 242 grains/g brood or 13.772 grains/brood, the egs diameter increased of 0,1925 mm, eggs maturation increased by 20% and ovisomatik index value of 14,75%.

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