

## ***Using Ovaplant to Induce Maturation in Cultured Fish***

### **Features**

Ovaplant can advance and synchronize spawning dates in cultured fish. As well, Ovaplant is quick and easy to use. The results are predicable and reliable without affecting fecundity, fertility and survival. In males, milt production is increased for extended times. In females, maturation of ova is complete without adverse affects. Ovaplant can be used in a variety of cultured fish and in many applications: re-start stalled maturation, synchronize spawning times, induce maturation in hard to breed fish and ensure breeding in endangered stocks. Ovaplant has emerged worldwide as a key tool in broodstock management.

### **Product Description**

Ovaplant contains a potent analogue of a naturally-occurring brain peptide. This peptide initiates maturation in all species of fish through the fishes' own internal mechanisms. Ovaplant comes as pellet that is implanted into the fish prior to spawning date. The controlled release of the peptide over time ensures the safe induction of spawning. The peptide vehicle is 100% biodegradable and is made from all natural compounds. Moreover, the ingredients of the implants will not harm the fish or humans.

### **Method of action**

The active ingredient of Ovaplant is the analogue of salmon GnRH or sGnRH<sub>a</sub>. The native peptide is released from brain cells of the hypothalamus that then bind to receptors on pituitary cells. The sGnRH<sub>a</sub> in Ovaplant acts in this fashion except that

- it travels to the pituitary from the pellet through the blood,
- it is present in greater than physiological amounts and
- binds to the pituitary receptors with a greater affinity than native peptide and hence is more potent.

These three factors, external source, greater availability and greater potency, induce and increase a continued liberation of maturational hormones from the pituitary. These pituitary hormones elicit gonad maturation together with the constituent and complementary hormone production from the gonads. The result is the earlier, complete production of viable eggs and milt.

### **Applications**

Ovaplant can be used in a population of fish with a well-defined breeding or spawning period. Ovaplant can advance maturation dates by 4-6 weeks in populations with a uniform and short spawning period. In other cases, Ovaplant can move spawning dates by 3 weeks. When used in the normal spawning season, using Ovaplant will compress the spawning season to within 1-2 weeks post-implantation. Ovaplant can also be used in fish that have been photoperiod controlled. There is no substitute for well-described broodstock performance and the best results for using Ovaplant are in stocks with a recorded spawning history.

### **Typical uses**

Here are four main uses of Ovaplant:

1. To advance spawning date in a population. An advanced spawning date gives producers a greater flexibility in marketing ova and offspring. It also has many beneficial downstream effects that are realized when spawning is confined to a predictable and

- defined period.
2. To compress the spawning season. Often fish in a population will spawn over a protracted period. Ovaplant can compress and shorten the spawning season that permits optimization of time and resources.
  3. To restart stalled maturation. Sometimes handling or other stress causes valuable broodstock to stop maturing after the process has begun. Ovaplant can help to restart maturation in a natural way without effecting gamete viability.
  4. To increase milt production. Chronic problems of milt shortages are commonplace in aquaculture. This may disrupt detailed breeding programs. Ovaplant serves to increase milt production and lengthen the time males will produce.

### **Species list**

Ovaplant can be used in all species of fish. The forms of GnRH that naturally occur in the brains of fishes differ throughout the more than 25,000 fish species. However, the salmon form of GnRH is present in most of these fish and thus the sGnRHa in Ovaplant is the peptide of choice. Among the other types of GnRH found in the other fishes, there is such a conservation of form and function that Ovaplant works successfully. For specific application of Ovaplant to your fish, consult Syndel Labs.

### **Critical Requirements**

It is primary important that the protocols of Ovaplant be used for successful results. Paramount is defining the intended purpose: advanced maturation, compressed spawning, re-starting maturation or increased milt production. In each of these applications the timing of Ovaplant use differs. Generally, the closer to normal spawning date that Ovaplant is used, the greater the success.

Another consideration is sample size. Fish spawn in a season that may span weeks or months. By implanting only a few fish from a population, it is equally likely that late and early spawning fish could be chosen. This would give results concomitant with the reproductive state in individual fish: all fish would spawn earlier than normal (eg weeks earlier), but it would be impossible to determine which fish were moved forward the most or at all. The solution is to try Ovaplant on a larger sample of fish with a well-defined history of spawning dates.

### **Packaging and Presentation**

Ovaplant comes in a cassette that contains 24 implants. The cassettes fit into an implanting gun that is easy to use and is autoclavable. The removable implanting needles are disposable and can be sterilized. Simply insert the needle, pull the trigger and withdraw the needle. The implants contain enough sGnRHa to accommodate a range of fish weights with a wide range of therapeutic efficacy.

### ***Using Ovaprim to Induce Spawning in Cultured Fish***

## **Product Description**

Ovaprim contains a potent analogue of a naturally occurring brain peptide. This peptide initiates maturation in all species of fish through the fishes' own internal mechanisms. Ovaprim comes as liquid that is injected into the fish during the spawning season. The active ingredients in Ovaprim induce the fish into maturing within a week to 10 days. The peptide vehicle is 100% biodegradable, is inert and will not harm the fish or humans.

## **Method of action**

The active ingredients of Ovaprim are the analogue of salmon GnRH (sGnRH<sub>a</sub>) and a dopamine inhibitor. The native GnRH peptide is released from brain cells of the hypothalamus that then bind to receptors on pituitary cells. The sGnRH<sub>a</sub> in Ovaprim acts in this fashion except that it:

- travels to the pituitary from the injection site through the blood,
- is present in greater than physiological amounts and
- binds to the pituitary receptors with a greater affinity than native peptide and hence is more potent.

These three factors, external source, greater availability and greater potency, serve to induce a spontaneous liberation of maturational hormones from the pituitary. These pituitary hormones elicit gonad maturation together with the constituent and complementary hormone production from the gonads. The result is the earlier, complete production of viable eggs and milt.

## **Applications**

Ovaprim can be used in any population of fish during or shortly before the spawning season. Ovaprim can advance maturation dates by up to 4 weeks in populations with a uniform and short spawning period. In other cases, Ovaprim can move spawning dates by 1-2 weeks. When used within a spawning population, Ovaprim will compress the spawning season to within 1-2 weeks post-injection. Ovaprim can also be used in fish that have been photoperiod controlled. There is no substitute for well-described broodstock performance and the best results for using Ovaprim are in stocks with a recorded spawning history.

## **Typical uses**

There are four main uses of Ovaprim:

1. To synchronize spawning dates in a population. Synchronized spawning dates give producers a greater flexibility in marketing ova and offspring. It also has many beneficial downstream effects that are realized when spawning is confined to a predictable and defined period.
2. To compress the spawning season. Often fish in a population will spawn over a protracted period. Ovaprim can compress and shorten the spawning season that permits optimization of time and resources.
3. To induce maturation in reluctant fish. Sometimes breeders will not cooperate while mates are in season. Ovaprim can help to induce maturation in a natural way without effecting gamete viability.
4. To increase milt production. Chronic problems of milt shortages are commonplace in aquaculture. This may disrupt detailed breeding programs. Ovaprim serves to increase

milt production in males.

### **Species list**

Ovaprim can be used in all species of fish. The forms of GnRH that naturally occur in the brains of fishes differ throughout the more than 25,000 fish species. However, the salmon form of GnRH is present in most of these fish and thus the sGnRH<sub>a</sub> in Ovaprim is the peptide of choice. Among the other types of GnRH found in the other fishes, there is such a conservation of form and function that Ovaprim works successfully. Ovaprim has been used successfully in all major types of fish including:

- ornamentals
- salmonids
- cyprinids (goldfish, carp)
- cichlids
- catfish
- perch (sea bream, tilapia).

Ovaprim contains a dopamine inhibitor that is essential for inducing reproduction in cyprinids. For specific application of Ovaprim to your fish, consult Syndel Asia.

### **Critical Requirements**

It is primarily important that the protocols of Ovaprim be used for successful results. Paramount is defining the intended purpose: synchronize maturation, compressed spawning, induce maturation and increase milt production. In each of these applications the timing of Ovaprim use differs. Generally, Ovaprim is most effective when used within the spawning season.

### **Packaging and Presentation**

Ovaprim comes as a liquid in one size (10 ml) of re-sealable bottles. The liquid is ready to use and comes in a standard dose that is delivered to the fish through a standard syringe and needle. Correct injected volume is achieved by multiplying the weight of the fish by 0.5ml/kg. This delivers enough active ingredients to induce the desired effect. For milt production in most male fish, the dose is reduced by half. To apply, simply insert the needle in the bottle, withdraw a sufficient volume and inject Ovaprim into the abdominal cavity. Ovaprim is stable at room temperature and should be stored out of direct light. Again, it is most important to follow established protocols for using Ovaprim.

## SELECTED OVAPRIM FIELD RESULTS

	<u>SEX</u>	<u>DOSE (ml/kg)</u>	<u>TIME TO SPAWN</u>
<b><u>BREAM</u></b>			
Black ( <i>Acanthopagrus schlegel</i> )	F	0.8-1.0	8 - 12 hrs
Goldline ( <i>Sparas sarba</i> )	F	0.5-1.5	8 - 12 hrs
<b><u>CARP</u></b>			
Grass ( <i>Ctenopharyngodon idella</i> )	F	0.3-0.5	8 - 12 hrs
	M	0.1	
Silver ( <i>Hypophthalmichthys molitrix</i> )	F	0.5	8 - 10 hrs
	M	0.1	
Rohu ( <i>Labeo rohita</i> )	F	0.4-0.5	10 - 14 hrs
Mrigal ( <i>Cirrhinus mrigala</i> )	F	0.5	10 - 14 hrs
Catia ( <i>Catia catia</i> )	F	0.5	10 - 14 hrs
Bighead ( <i>Aristichthys nobilis</i> )	F	0.5	16 hrs
Common ( <i>Cyprinus carpio</i> )	F	0.5	14 - 16 hrs
Fringe Lipped ( <i>Labeo fimbriatus</i> )	F	0.3-0.4	6 - 8 hrs
<b><u>CATFISH</u></b>			
<i>Clarias batrachus/macrocephalus</i>	F	0.3	20 - 24 hrs
	M	0.2	
African ( <i>Clarius lazera</i> )	F	0.5	12 - 16 hrs
	M	0.2	

Summary of **Ovaproduct** uses:

**Ovaprim**

- Induce maturation within a spawning season,
- Advance spawning date by 1 week before season, 3 weeks within season,
- Coordinate and synchronize spawning times,
- Increase milt production including increased sperm count, Induce maturation in difficult species,
- Induce spawning in the most important and difficult to spawn species.

**Ovaplant**

- Induce maturation in advance of the spawning season, Coordinate and synchronize spawning times,
- Increase milt production including increased sperm count, Induce maturation in difficult species,
- Overcome handling shock or arrested maturation

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