

(Acipenser persicus)

in vitro (IGF-I)

in vitro
 DHP (IGF-I)
 (hCG)
 hCG DHP
 GVBD
 GVBD IGF-I (PI> / PI< /)
 ng/ml DHP ng/ml IGF-I GVBD
 IGF-I ng/ml (PI> /)
 DHP ng/ml DHP ng/ml
 IGF-I ng/ml GVBD
 hCG GVBD
 IGF-I IGF-I
 DHP GVBD IGF-I ng/ml
 hCG ng/ml
 (P< /) hCG IU/ml IGF-I ng/ml
 IGF-I
 GVBD IGF-I

... (Acipenser persicus)

()

()

(GtH_s)

IGF-I

()

IGF-I

IGF-I () ()

() (GVBD)

in vitro

(FOM) (GnRH)

() (*Pagrus major*) (MIH)

Labeo () (*Morone saxatilis*)

() (*rohita*)

(*Acipenser persicus*) (MPF)

()

()

IGF-I

GVBD MIH

IGF-I (IGF-I)

Germinal Vesicle BreakDown

Maturation-Inducing Hormone

Maturation Promoting Hoamone

Insulin-Like Growth Factor-I

Final Oocyte Maturation

Polarization Index

(PI)

in vitro

(GVBD)

()

(PI < /)

(PI > /)

()

(GroPep-Australia Cat. Cod IU100)

μl

(Bovin Serum BSA μl mM
mg/ml Albumin, Merck)

17α, 20β-dihydroxy-4- MIH .

(Sigma Cat.Cod pregnen-3-one (DHP)
mg/ml P6228)

ml Pregnyl hCG
()

) IGF-I (L-15 Sigma
(hCG) (mM) Hepese Cat.Cod L5220
(17,20β-diOH-4-Pregnen-3-one) (mg/L) (mg/L)

IGF-I MIH g/L BSA
pH

(FOM)
(GVBD)

(Falkon)

IGF-I

DHP (ng/ml)

IU/ml) hCG (ng/ml)

() (ng/ml)

(

... (Acipenser persicus)

GVBD

(ng/ml) IGF-I
hCG DHP
()
IU/ml ng/ml

DHP ng/ml -
GVBD -
IGF-I

GVBD
ng/ml (PI< /)
IGF-I

ng/ml (PI> /)
IGF-I ml
hCG DHP

IGF-I ng/ml
GVBD
± / C°

() IGF-I ng/ml
IGF-I
ng/ml GVBD

ng/ml DHP

IU/ml hCG () -t

hCG DHP IGF-I

hCG

ng/ml

hCG

ng/ml IGF-I DHP IGF-I hCG

GVBD

IGF-I

hCG DHP

IGF-I

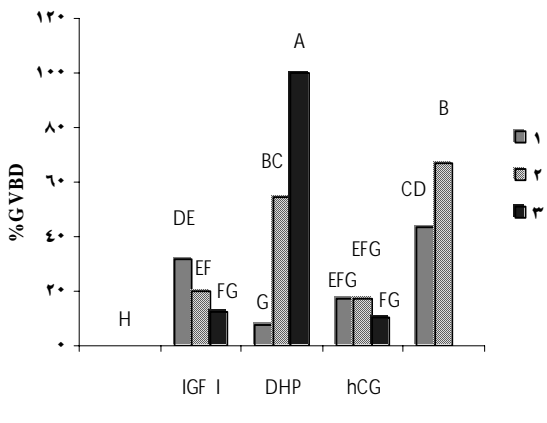
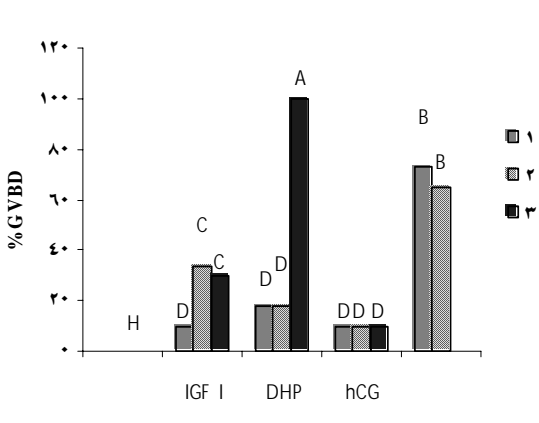
hCG DHP IGF-I

IGF-I

IGF-I

GVBD

PI	(cm)	(cm)	(cm)	(Kg)	
/		/	/		
/	/		/		
/			/		
/	/		/		



()

IGF-I IU/ml hCG ng/ml DHP ng/ml

...

(Acipenser persicus)

DHP

GVBD

IGF-I

.()

GVBD

PI> /	PI< /		
/	/		
/ **	/ **		
/	/		

%

**

GVBD

		GVBD	
	(ng/ml or IU/ml)		
IGF-I		/ ± / *	±
		/ ± /	/ ± /
		/ ± /	± **
		/	/
DHP		/ ± /	/ ± /
		/ ± / *	/ ± /
		±	±
		/	/
hCG		/ ± / *	±
		/ ± / *	±
		/ ± /	±
		/ **	
		/ ± /	/ ± /
		/ ± /	/ ± /
		/	/

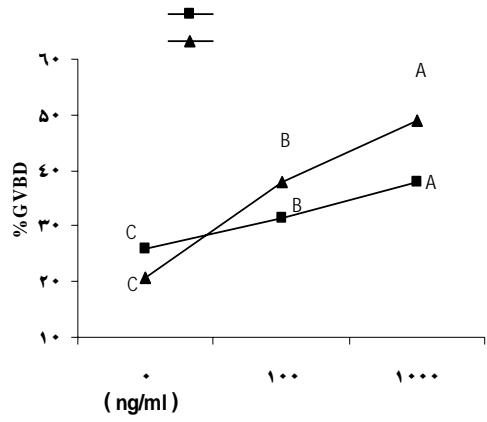
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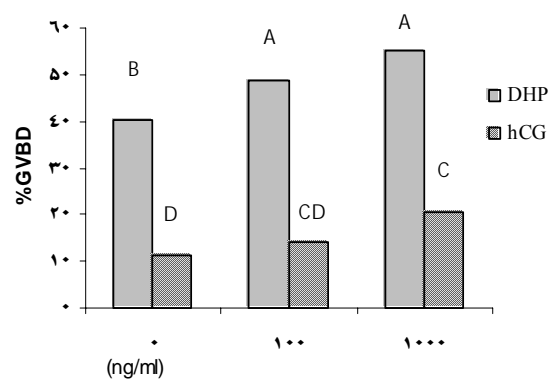
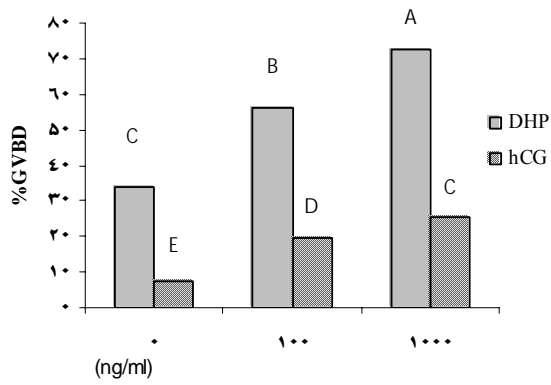
(± SEM)

t



IGF-I

GVBD



()

GVBD hCG DHP

IGF-I

()

... (Acipenser persicus)

GVBD		hCG	DHP	IGF-I	
PI> /		PI< /			
/		/			
/ **		/ **			IGF-I
/		/			
/ **		/ **			(DHP hCG)
/ **		/ ns			×
/		/			
/ **		/ **			
/ **		/ **			×
/ **		/ **			×
/ **		/ *		×	×
/		/			
				ns, %	** % *

DHP IGF-I () ng/ml IGF-I
 hCG DHP ng/ml ng/ml
 ()
 ()
 . IGF-I . IGF-I ng/ml
 IGF-I ng/ml DHP ng/ml
 ng/ml IGF-I DHP
 ng/ml DHP () IGF-I DHP
 IGF-I hCG
 hCG GVBD
 .
 .(t) hCG IGF-I
 GVBD

... (Acipenser persicus)

MIH ng/ml

MIH

()

ng/ml

(MIH) DHP

(ng/ml)

ng

GVBD

IGF-I hCG

GVBD

IGF-I

IGF-I

hCG

IGF-I

IGF-I

()

hCG

hCG

DHP

hCG

()

GVBD

DHP

ng/ml

DHP

()

MIH

IGF-I

MIH

ng/ml)

GVBD

()

(

ng/ml

GVBD

IGF-I

(OMC)

IGF-I

()

Fundulus

DHP

MIH

()

heteroclitus

DHP

ng/ml

OMC

GVBD

MIH

hCG

()

	hCG	DHP	IGF-I	IGF-I	hCG
			IGF-I		
			hCG		
			(IGF-I)	()	IGF-I
	IGF-I			()	
	GVBD	IGF-I	:	()	IGF
		IGF-I			IGF-I
			IGF-I		
<i>Xenopus</i>			()	<i>laevis</i>	hCG DHP
			IGF-I		
	IGF-I				hCG DHP
					()
			IGF-I		
			GVBD		DHP
				()	GVBD
				()	
				MIH	
				17, 20 β , 21-trihydroxy-4-Pregnen-3-one	
		GVBD		IGF-I	
				()	IGF-I
				IGF-I	()
			()		MIH
			IGF-I		ng/ml
				ng/ml	DHP
				IGF-I	
					MIH

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Insulin-Like Growth Factor-I can Induce Oocyte Maturation in Persian Sturgeon (*Acipenser Persicus*), *In vitro*

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Abstract

A comparative study on the effect of insulin-like growth factor-I (IGF-I) with DHP, hCG and acetone dried pituitary in Persian sturgeon (adsP) on *in vitro* germinal vesicle breakdown (GVBD) was examined in oocytes of Persian sturgeon. Moreover, the effect of DHP and hCG in pretreated oocyte with IGF-I was also examined. The study was carried out on two maturational stages of oocytes according to polarization index (PI<0.07 and PI>0.1). The oocytes, used on two germinal vesicle positions, underwent GVBD in response to IGF-I (10, 100, 1000 ng/ml). The rate of GVBD varied on each dose. In oocytes with PI<0.07, IGF-I (10, 100 ng/ml) it was more potent than DHP (10 ng/ml) while in oocytes with PI>0.1, IGF-I (100, 1000 ng/ml) more potent than DHP (10, 100ng/ml) on GVBD induction. IGF-I (10 ng/ml) in PI<0.07 and (100, 1000 ng/ml) in PI>0.1 induced more GVBD than hCG (10, 100, 1000 IU/ml). In two PIs, adsP was more potent than IGF-I. Pretreatment of oocytes (PI<0.07 and PI>0.1) with IGF-I (100, 1000 ng/ml) and then treatment with DHP (100 ng/ml) could increase GVBD as compared to oocytes that were not pretreated. Oocytes pretreated with IGF-I (1000 ng/ml) and then treated with hCG (100, 1000 IU/ml) underwent GVBD only in PI>0.1 (P<0.05). These results suggest, for the first time in chondrosteian fish, that IGF-I is involved in the induction of GVBD of oocytes. IGF-I appears to act directly on oocyte as well as in conjunction with DHP or hCG, to induce GVBD.

Keywords: Insulin-like growth factor-I, Oocyte maturation, Persian sturgeon, Maturation inducing Hormone, Gonadotropin

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