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Research Article

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Protein contain in *Cyprinus carpio* (Ham.) of experimental and control fishes due to administration of ovaprim, ovatide and pituitary gland extract at Fish Seed Production Centre, Paithan, Aurangabad, Maharashtra State, India

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ABSTRACT

Protein contain is a cornerstone mechanism and form part and parcel of nutritive value in particular rely on season, food intake, breeding and spawning capacity. The protein contain in the fish body constitute as a firsthand source of energy for physiological functions incorporating reproduction. Present investigation display that variations in the protein is observed from the mature fishes of Indian major carps such as *Cyprinus carpio* comprises 20 to 50cm selected for the estimation of protein study considered as experimental and control fishes upon administration of PGE, ovaprim and ovatide synthetic hormonal doses to the male and female sex ratio separately. Protein in the liver of female major carps may be because of vitellogenin, a lipoprotein which is synthesized in the liver and is transported to the ovary (Wallace, 1985). Moreover, gonadal protein enhanced with maturation amongst these fishes. Protein estimation represents the variations throughout the study period amongst the muscle, gonad and liver. After hormonal injections are given then fishes are kept in the breeding pool at the Fish Seed Production Centres (FSPC) located near Paithan barrage. The protein is estimated upon satisfactory administration of hormonal doses Pituitary Gland Extract and by other two synthetic hormonal doses viz. Ovaprim and Ovatide. Study is conducted during 2013 to 2014.

KEYWORDS: Protein estimation, *Cyprinus carpio*, Fish Seed Production Centre, PGE and synthetic hormones ovaprim and ovatide

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INTRODUCTION

The selected ratio male and female was kept 2:1. Doses allotted PGE 2mg to 6mg and ovaprim and ovatide were 0.4 to 0.6ml/kg body weight for female fish whereas for male it was 1.5 to 3ml kg/ body weight of fish. Due to administration of ovatide hormonal dose implemented was 0.45 ml/kg of fish in accordance with the report of CIFE presented in 1998 [1]. Ovatide is important and inexpensive hormones that constitute 70% more financially profitable in collation to ovaprim suggested by Bhatti and Qureshi [2]. The positive good response on the part of *Cyprinus carpio* upon administration of pituitary gland extract and for ovaprim and ovatide hormones connoted the higher competency of such hormones in stimulating the induced spawning of *Cyprinus carpio.* Protein is an important constituent for maintaining and maintenance of body building muscle as suggested by Bonjour [3]. Brown & Murphy [4] suggested that muscle protein was the least dynamic tissue. Protein is not competent firsthand energy source for fish. It will be utilized as an energy purpose as and when available energy from other sources lipid and carbohydrates is inadequate have unearthed by Phillips, 1969. Rattan in 1994 suggested that protein and lipid resources may be utilized in the pre-spawning period and the muscle reserve in the post-spawning period in *Etroplus suratensis*. Medford and Mackay have unveiled in 1978 showed that muscle protein of northern pike, *Esox lucius* were

high before spawning and low after spawning. This could be attributed to the fact that these constituent might have been utilized for spawning and gonadal development.

MATERIAL AND METHODS

The fishes were procured from the breeding pool after injecting the pituitary gland extract and ovaprim and ovatide. Fishes considered as experimental those were injected by hormonal doses. Control fishes were kept without treatment. For the experiment purpose freshly caught fishes of *Cyprinus carpio* have brought to laboratory in order to estimate protein biochemical composition for male and female respectively in the early spawning and late spawning seasons in the month of June-July to August-September 2013-2014. Initially determined injections of hormonal doses were given for the female fish i.e. pituitary gland extract after 6 hours at the second time both male and female were simultaneously injected to stimulate for breeding purpose so that they make release of eggs and sperm in good quantity.

RESULTS

Upon administration of PGE dose and synthetic hormonal dose viz. ovaprim and ovatide as and when given for the male and female *Cyprinus carpio* fishes separately. These doses have been allotted to enhance induced breeding competency. In the present investigation results suggested that the protein contain in the gonad is higher upon administration of ovatide in the *Cyprinus carpio* subsequently PGE and followed by ovaprim hormonal dose. Mean value of 3 sample size with ± SD is calculated.

DISCUSSION

The study on protein level from *Cyprinus carpio* from both for experimental and control fishes upon administration of hormonal dose Ovaprim at FSPC.

Muscle: The protein in the male muscle from experimental fishes value (18.941±0.818) was observed which is non-significant (P<0.05) whereas from control fishes study comparatively showed dwindled (16.984±0.607) in June-July. An increase in the male muscle protein from experimental fishes value was (20.762±0.818) which is non-significant (P<0.05) on the other hand comparatively from control fishes study (18.806±0.535) in the month of August-September. The protein in the female muscle from experimental fishes value was represented (18.468±0.509) which is non-significant (P<0.05) and comparative analysis of the study from control fishes showed (17.119±0.618) in June-July (Table 1). The protein in female muscle from experimental fishes value was somewhat increased to (18.738±0.710) which is non-significant (P>0.05) and as compared to control fishes study value (18.064±0.618) during August-September (Table 2).

Gonad: The protein in the male testis from experimental fishes was observed (13.948±0.607) which is non-significant (P>0.05) while analysis at control fishes showed (12.463±0.650) in June-July (Figure 1). The protein in male testis for experimental fishes value was observed increased (17.321±0.710) which is less significant (P<0.01) on the other side at control fishes comparative study (14.960±0.607) in the month of August-September (Figure 2). The protein in the female ovary from experimental fishes was noticed (14.960±0.535) which is non-significant (P<0.05) as compared to control fishes study (12.868±0.509) during June-July. The protein in the female ovary from experimental fishes was observed (16.782±0.535) which is non-significant (P>0.05) and comparative study at control fishes showed value (14.960±0.404) in August-September.

Liver: The protein in the male liver from experimental fishes value was expressed (11.586±0.509) which is non-significant (P<0.05) and simultaneous study at control fishes (10.169±0.421) in June-July (Figure 3) whereas from experimental fishes the male liver protein was (13.610±0.650) which is non-significant (P>0.05) whereas comparative study from control fishes (12.328±0.607) during August-September (Figure 4). The protein in the female liver from experimental fishes showed (10.372±0.509) which is non-significant (P<0.05) while comparative study conducted from control fishes value showed (9.089±0.202) in June-July. The protein in the female liver increased from experimental fishes was observed (14.218±0.509) which is less significant (P<0.01) and from data calculated from control fishes value (12.463±0.421) in August-September.

The study on protein level from *Cyprinus carpio* from both for experimental and control fishes upon administration of hormonal dose Ovatide represent following results from FSPC.

Muscle: The protein in the male muscle from experimental fishes value (17.659±0.650) was observed which is non-significant (P>0.05) whereas from calculated study from control fishes showed (17.186±0.535) in June-July respectively. Slightly increase in male muscle protein from experimental fishes value was (18.536±0.421) which is non-significant (P>0.05) and on the other hand comparative study from control fishes (17.119±0.618) in the month of August-September. The protein in the female muscle from experimental fishes value was represented (19.480±0.509) which is non-significant (P>0.05) and from the comparative study of a control fishes (19.278±0.309) in June-July. The protein in the female muscle from experimental fishes value was (19.548±0.618) which is non-significant (P>0.05) and from control fishes comparative study value displayed (17.929±0.618) during August-September.

Gonad: The protein in the male testis from experimental fishes was observed (15.162±0.202) which is non-significant (P<0.05) and calculated study from control fishes (13.340±0.404) in June-July. The protein in male testis for experimental fishes value was observed increased (17.929±0.618) which is non-significant (P>0.05) when comparatively studied from control fishes (16.242±0.116) in the month of August-September. The protein in the female ovary from experimental fishes was

Table 1: Protein content of *Cyprinus carpio* upon administration of (0, 0 & PGE) during (2013-2014) June-July

Tissue	Sex	Ovaprim		Ovatide		Pituitary G. extract	
		Expt.	Control	Expt.	Control	Expt.	Control
Muscle	M	18.941	16.984	17.659	17.186	18.198	16.917
		0.818	0.607	0.650	0.535	0.350	0.710
		*		ns		ns	
	F	18.468	17.119	19.480	19.278	20.155	19.278
		0.509	0.618	0.509	0.309	0.309	0.309
		*		ns		ns	
Gonad	M	13.948	12.463	15.162	13.340	14.622	13.138
		0.607	0.650	0.202	0.404	0.509	0.809
		ns		*		ns	
	F	14.960	12.868	20.965	18.266	17.119	15.432
		0.535	0.509	0.710	0.509	0.818	0.421
		*		**		*	
Liver	M	11.586	10.169	14.285	12.936	12.733	11.114
		0.509	0.421	0.421	0.607	0.607	0.350
		*		ns		*	
	F	10.372	9.089	16.647	14.960	15.702	13.813
		0.509	0.202	0.421	0.404	0.509	0.116
		*		**		***	

Mean value of 3 sample size with ± SD, *= P<0.05, **= P<0.01, ***= P<0.001, ns= P> 0.05 non- significan

Table 2: Protein content of *Cyprinus carpio* upon administration of (0, 0 & PGE) during (2013-2014) August-September

Tissue	Sex	Ovaprim		Ovatide		Pituitary G. extract	
		Expt.	Control	Expt.	Control	Expt.	Control
Muscle	M	20.762	18.806	18.536	17.119	20.425	19.413
		0.818	0.535	0.421	0.618	0.535	0.404
		*		ns		ns	
	F	18.738	18.064	19.548	17.929	21.032	21.167
		0.710	0.618	0.618	0.618	0.404	0.710
		ns		ns		ns	
Gonad	M	17.321	14.960	17.929	16.242	19.548	16.984
		0.710	0.607	0.618	0.116	0.710	0.809
		**		ns		**	
	F	16.782	14.960	17.524	16.849	18.671	17.389
		0.535	0.404	0.710	1.018	0.710	0.809
		ns		ns		ns	
Liver	M	13.610	12.328	14.690	12.936	16.647	15.230
		0.650	0.607	0.710	0.809	0.818	0.467
		ns		ns		ns	
	F	14.218	12.463	16.647	14.757	16.512	14.757
		0.509	0.421	0.116	0.607	0.309	0.202
		**		***		**	

Mean value of 3 sample size with ± SD, *= P<0.05, **= P<0.01, ***= P<0.001, ns= P> 0.05 non- significant

noticed (20.965±0.710) which is less significant (P<0.01) and study from control fishes showed (18.266±0.509) during June-July. The protein in the female ovary from experimental fishes was observed as (17.524±0.710) which is non-significant (P>0.05) on the other hand from control fishes (16.849±1.018) respectively in August-September.

Liver: The protein in the male liver from experimental fishes value was showed (14.285±0.421) which is non-significant (P>0.05) and when comparative study made from control fishes (12.936±0.607) in June-July whereas from experimental fishes the male liver protein was (14.690±0.710) which is non-significant (P>0.05) as compared with control fishes

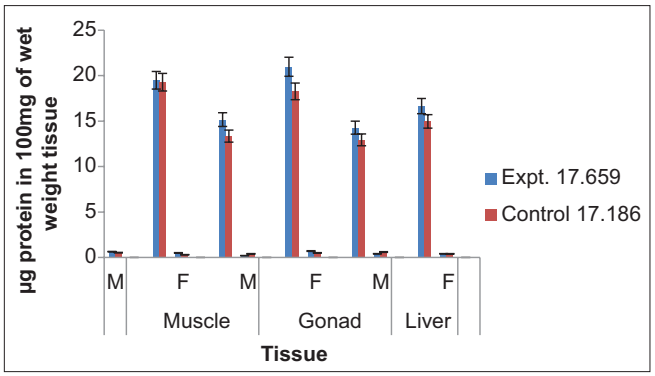

Figure 1: Protein content in *Cyprinus carpio* during June-July at FSPC, Paithan

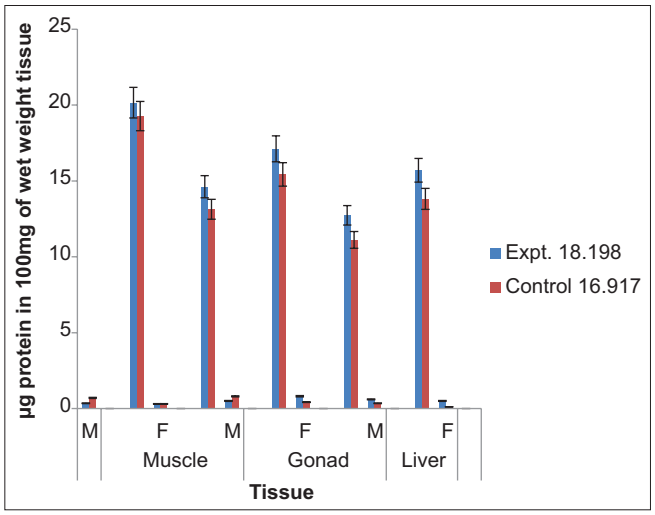

Figure 2: Protein content in *Cyprinus carpio* during August-September at FSPC, Paithan

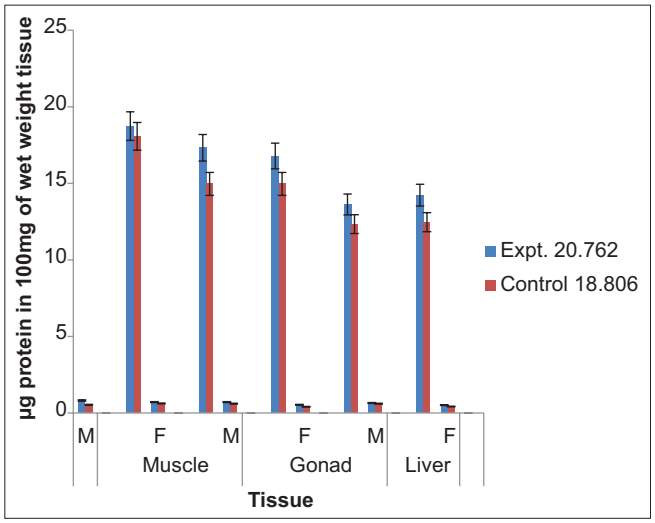

Figure 3: Protein content in *Cyprinus carpio* during June-July at FSPC, Paithan

(12.936±0.809) during August-September. The protein in the female liver from experimental fishes showed (16.647±0.421) which is less significant (P<0.01) while comparatively data

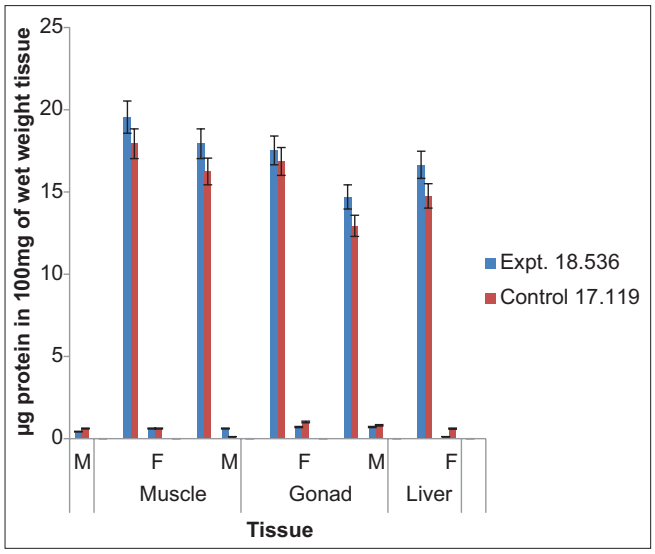

Figure 4: Protein content in *Cyprinus carpio* during August-September at FSPC, Paithan

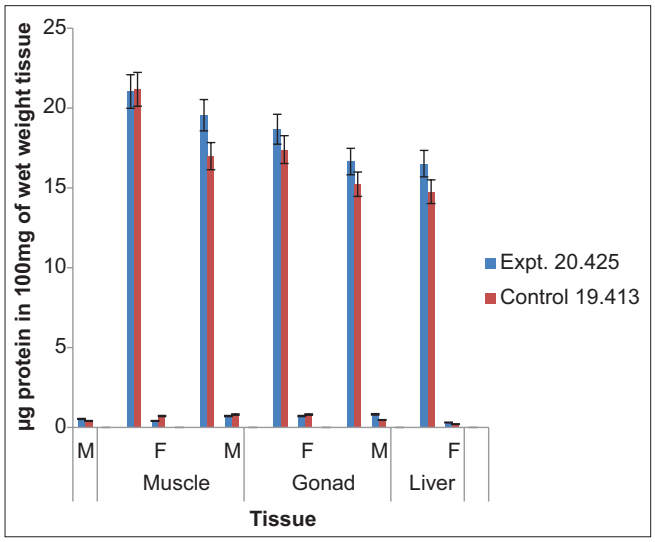

Figure 5: Protein content in *Cyprinus carpio* during June-July at FSPC, Paithan

analysis from control fishes (14.960±0.404) in June-July. The protein in the female liver from experimental fishes was observed (16.647±0.116) which is highly significant (P<0.001) and from control fishes study (14.757±0.607) in August-September.

The study on protein level from *Cyprinus carpio* from both experimental and control fishes upon administration of hormonal dose Pituitary Gland Extract represent following results.

Muscle: The protein in the male muscle experimental fishes value (18.198±0.350) was observed which is non-significant (P>0.05) whereas from control fishes showed dwindled (16.917±0.710) in June-July respectively (Figure 5). An increase in the male muscle protein from experimental fishes

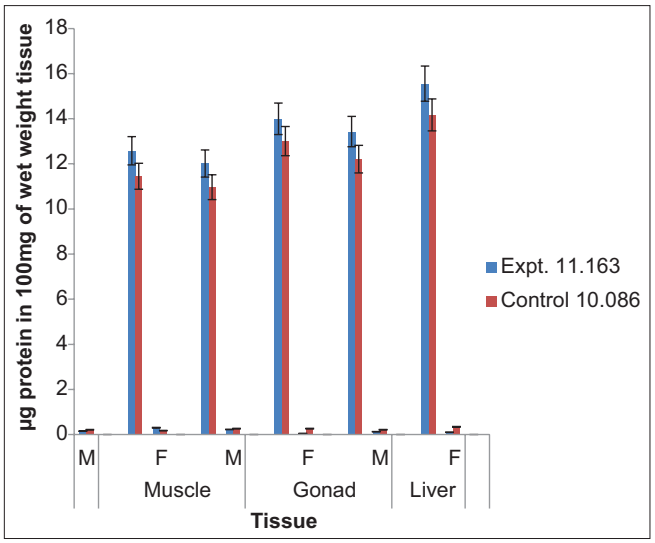

Figure 6: Protein content in *Cyprinus carpio* during August-September at FSPC, Paithan

value was (20.425±0.535) which is non-significant (P>0.05) as compared to control fishes (19.413±0.404) in the month of August-September (Figure 6). The protein in the female muscle from experimental fishes value was represented (20.155±0.309) which is non-significant (P>0.05) when comparatively from control fishes (19.278±0.309) in June-July. The protein in female muscle from experimental fishes value was somewhat increased (21.032±0.404) which is non-significant (P>0.05) while comparatively study made from control fishes (21.167±0.710) during August-September

Gonad: The protein in the male testis from experimental fishes was observed (14.622±0.509) which is non-significant (P>0.05) when compared with control fishes (13.138±0.809) in June-July. The protein of male testis for experimental fishes value was observed increased (19.548±0.710) which is less significant (P<0.01) while control fishes study (16.984±0.809) in the month of August-September. The protein in female ovary from experimental fishes was noticed (17.119±0.818) which is non-significant (P<0.05) as compared to control fishes (15.432±0.421) during June-July. The protein in the female ovary from experimental fishes was observed as (18.671±0.710) which is non-significant (P>0.05) when compared with control fishes (17.389±0.809) respectively in August-September

Liver: The protein in the male liver from experimental fishes value was showed (12.733±0.607) which is non-significant (P<0.05) while comparatively study made with control fishes (11.114±0.350) in June-July whereas from experimental fishes the male liver content protein was (16.647±0.818) which is non-significant (P>0.05) as compared to control fishes (15.230±0.467) during August-September. The protein in the female liver from experimental fishes showed (15.702±0.509) which is highly significant (P<0.001) while in control fishes study (13.813±0.116) in June-July. The protein in the female liver from experimental fishes was observed (16.512±0.309) which is less significant (P<0.01)

and from control fishes showed (14.757±0.202) in August-September.

CONCLUSION

The present study unearthed that pituitary gland extract plus after six hours ovaprim and ovatide hormonal injections are given to experimental and control fishes. Study is more economically beneficial in commercial common carp seed production. In fisheries to stimulate ovulations by means of synthetic hormones have been procuring in vogue popularity because fruitful spawning and ovulation correspond with the maximum fish production. Variations in protein contain in the muscles thereafter gonad followed by liver were observed among selected common carps upon administration of PGE then ovatide followed by ovaprim. Under the impact of these hormones however, overall utility of ovatide was better than PGE followed by ovaprim in the case of *Cyprinus carpio* because it caused at the most of the optimum fecundity and fertilization when experimental and control fishes were injected by these hormones. When the comparative analysis connoted better breeding performance in such common carp fishes upon administration of PGE then ovatide and followed by ovaprim,.

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