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Studies On Moisture And Fat Content In Different Organs Of *Puntius sarana* From Godavari River At Nanded Region (M.S.)

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Abstract: ***Puntius sarana*** **is a teleost fish commonly known as 'Potis' in Nanded region.The healthy fish specimens were purchased from the weekly market at Nanded, between April 2015 to March 2016. From market they were carried in iced box and immediately transported to the laboratory. The specimens after having brought to the laboratory were cut open to determine the sex and biochemical analysis i.e. fat and moisture content were carried out. The percentage of moisture in the muscles of *Puntius sarana* was found to fluctuate between 53.60% to 60.25 %. The percentage of moisture in liver was found to fluctuate between 53.10% to 57.94%. In ovaries the percentage of moisture content fluctuates between 53.00 % to 57.47%. The fat content in muscle was found to fluctuate between 1.60% to 2.39%. The fat content in liver was fluctuate between 3.07% to 4.10%. The fluctuation in the percentage of fat content in ovaries was varied from 1.70% to 3.77%. The result obtained in this study has provided detailed knowledge of moisture and fat content of the *Puntius sarana* fish.**

Keywords: Puntius sarana, **Godavari River.**

1. INTRODUCTION

Fish is known as an important source of food and also provide certain other useful products and hence has a great significance in the life of mankind. Balanced diet is very essential for satisfactory growth and health of human beings. In the present study moisture and fat contents were estimated monthly in muscles, liver in both sexes and gonads in females only. Monthly estimation of body components were carried out from April 2015 to March 2016. Durairaj (1962), found increase in the water percentage in muscles and ovaries of *Cirrhina reba* during spent condition. According to Jafri and Khawja (1968) the moisture content in the spawning season is low in *Ophiocephalus punctatus*. Jafri (1968), correlated the rise and fall in the fat contents of muscles with the feeding activity and the maturation cycle in *Mystus seenghala*.Jafari and Khawaja (1968) observed that the saturation of gonads was accompanied by rise in its fat content.

2. MATERIALS AND METHODS

Sampling site: *Puntius sarana* were purchased from weekly market at Nanded, Maharashtra State (India) from the fisherman. The fish samples were transported in an insulated iced container to the Fishery laboratory of N.E.S.Science College, Nanded (M.S.)

Moisture Determination: Each fresh tissue sample was weighed accurately and dried in an oven at 80^0 C for 24 hours and then weighed again after cooling at room temperature in desiccators. The difference in two weights viz, wet weight and dry weight of the sample was considered as moisture content.

Fat Determination: The fat was estimated from the known amount of dry sample with the solvent ether in Soxhlet apparatus till no more fat was extracted. The ether was then evaporated and the resultant fat was weighed accurately.

3. RESULTS AND DISCUSSION

Moisture Content: From the Tables (1&2) the percentage of moisture in the muscles of *Puntius sarana* was found to fluctuate between 53.60% in June to 60.25% in December in males and between 53.00% in June to 59.20% in December in females. From Fig. (1&2) it is evident that the percentage of moisture was found high from August to December in both the sexes being highest in December in both sexes. Low moisture percentage was observed in males from April to June and in females from March to June. It has been stated that *Puntius sarana* spawns once in a year for three months from April to June. From July to March in male and from July to February in female, the moisture percentage was high, when the specimens were in spent, recovering and immature condition. Hence it may be inferred that the fish contains high percentage in muscles in recovering, spent and immature conditions, while low moisture percentage was seen in the spawning season.

From Table (3&4) we found in liver, the variation in the moisture content were more or less similar to those in muscles. The moisture percentage was found to fluctuate between 53.10% in June and 57.94% in December in males and between 53.00% in June and 57.82% in December in females. From Fig. (3&4) it can be observed that high percentage of moisture was from July to December in male and from July to January in female indicating that the spent individual and those in the early stage of maturing have higher moisture percentage in liver. The percentage of moisture in the spawning season was comparatively low in females than males. From table (5) we found in the ovaries, the percentage of moisture content fluctuates between 53.00% in June and 57.47% in August. From Fig.(5) it was observed that high moisture percentage was present in July to February when large number of fishes were in spent, recovering and immature condition (post spawning season). As the fish advances towards the spawning season, the moisture content drop its level being gradually decrease from March to June.

In muscles the percentage of fat was found to fluctuate between 1.60% in November and 2.39% in June in males and from 1.61% in January and 2.75% in June in females. From the tables (1&2) it can be noted the percentage of fat was maximum in June in both sexes. The fat value was found to increase gradually from January and from February in females being higher in June in both the sexes and thereafter decreased up to November in males and January in females. From these observations it was clear that the fat values were low in post spawning and pre spawning months and high during the actual spawning period, indicating there by the fat increase in large amount in a fully ripe fish which has to undergo the spawning exertion.

Low fat values from August to December in males and from September to January indicates the transfer of muscle fat towards the development of gonads, followed a gradual rise up to June in both the sexes, indicating the accumulation of fat during the period prior to spawning.

The fat content in the liver was higher than that in muscles. In liver, percentage of fat fluctuates between 3.07% in September and 4.10% in June in males and from 2.77% in December and 4.15% in June in females. Higher fat value was noted from February to June in both the sexes. From tables (3&4) it has been noted that the fat contents was low during post spawning and high during the spawning season. This indicates that the fat reserve was more in fully ripe fish which has to undergo the spawning exertion.

The study reveals that a reciprocal relationship between moisture and fat was observed in the liver of both the sexes. The fluctuation in the percentage of fat content in the ovaries from 1.70% in January to 3.77% in June. Higher fat values were observed in March, April, May and June their percentage 2.98%, 3.48%, 3.77% respectively. From table (5) it can be noted that the low values in the ovarian fat were found in post spawning season, when generally the ovaries were in spent condition and also in immature state. From February onwards the fat content increased gradually up to June when ovaries had attained full maturity and spawning season had started. From this it can be said that the deposition of fat in the ovaries was accompanied by the maturity of fish. High percentage of fat was found during the spawning season i.e. from April to June.

The result of the present investigations shows that the rise and fall in the fat values correspond to the advancement of maturity and post spawning period respectively. These observations on the seasonal variation in the fat content of muscles, liver and ovaries of *Puntius sarana* confirm the earlier observations made by different workers.

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Table No. 01: MONTHLY FLUCTUATIONS IN THE PERCENTAGE OF VARIOUS CHEMICAL CONSTITUENTS OF MUSCLE OF MALE *Puntius sarana*

Month and Year	Moisture %	Fat %
April-2015	54.40	2.12
May-2015	54.33	2.33
June-2015	53.60	2.39
July-2015	55.00	2.00
August-2015	55.60	1.90
September-2015	56.25	1.73
October-2015	56.90	1.65
November-2015	57.20	1.60
December-2015	60.25	1.73
January-2016	55.65	1.82
February-2016	55.70	1.89
March-2016	56.00	1.97

Table-02: MONTHLY FLUCTUATIONS IN THE PERCENTAGE OF VARIOUS CHEMICAL CONSTITUENTS OF MUSCLE OF FEMALE *Puntius sarana*

Month and Year	Moisture %	Fat %
April-2015	53.25	2.37
May-2015	53.10	2.46
June-2015	53.00	2.75
July-2015	54.25	2.20
August-2015	55.80	2.09
September-2015	56.25	1.93
October-2015	56.80	1.87
November-2015	57.20	1.71
December-2015	59.20	1.65
January-2016	58.00	1.61
February-2016	56.20	1.97
March-2016	53.50	2.21

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Table- 03: MONTHLY FLUCTUATIONS IN THE PERCENTAGE OF VARIOUS CHEMICAL CONSTITUENTS OF LIVER OF MALE *Puntius sarana*

Month and Year	Moisture %	Fat %
April-2015	53.63	3.73
May-2015	53.36	3.85
June-2015	53.10	4.10
July-2015	54.25	3.56
August-2015	54.70	3.27
September-2015	55.15	3.07
October-2015	55.67	2.87
November-2015	56.23	2.79
December-2015	57.94	2.55
January-2016	55.10	3.10
February-2016	54.80	3.61
March-2016	54.10	3.67

Table-04: MONTHLY FLUCTUATION IN THE PERCENTAGE OF VARIOUS CHEMICAL CONSTITUENTS OF LIVER OF FEMALE *Puntius sarana*

Month and Year	Moisture %	Fat %
April-2015	53.20	3.69
May-2015	53.15	3.89
June-2015	53.00	4.15
July-2015	54.27	3.60
August-2015	54.68	3.51
September-2015	55.17	3.42
October-2015	55.83	3.19
November-2015	56.21	2.97
December-2015	57.82	2.77
January-2016	57.96	3.10
February-2016	54.63	3.21
March-2016	54.12	3.45

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Table-05: MONTHLY FLUCTUATION IN THE PERCENTAGE OF VARIOUS CHEMICAL CONSTITUENTS OF OVARIES (FEMALE) OF *Puntius sarana*

Month and Year	Moisture %	Fat %
April-2015	53.22	3.48
May- 2015	53.10	3.57
June-2015	53.00	3.77
July-2015	56.33	3.40
August-2015	57.47	3.21
September-2015	56.57	2.98
October-2015	55.21	2.60
November-2015	54.79	2.05
December-2015	54.51	1.98
January-2016	54.32	1.70
February-2016	54.10	2.10
March-2016	53.57	2.98

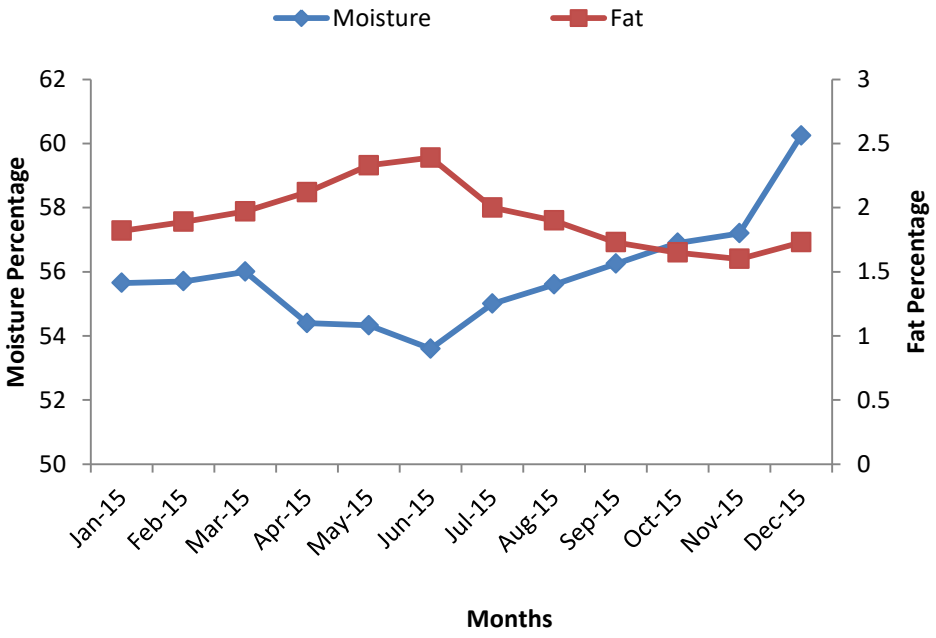

Fig. 01. Monthly fluctuation in the percentage of moisture & fats in the male muscle of *P. sarana*

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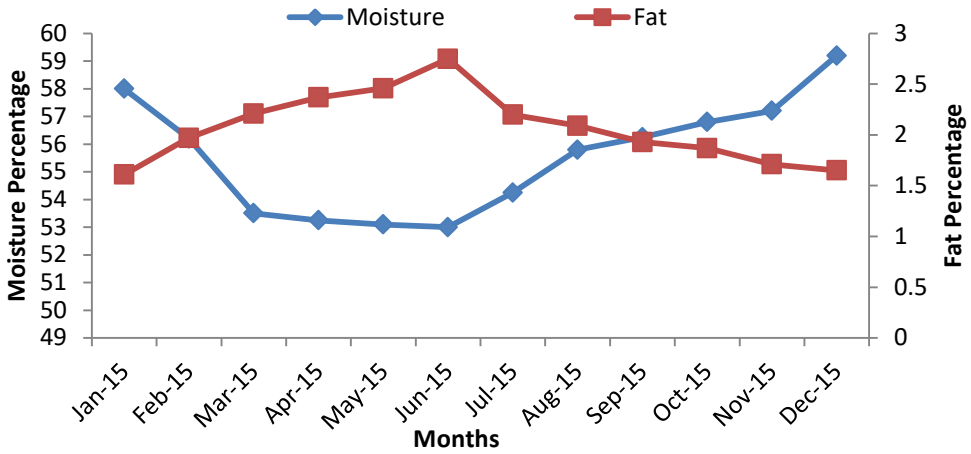

Fig. 02.Monthly fluctuations in the percentage of moisture and fats in the female muscle of *P. sarana*

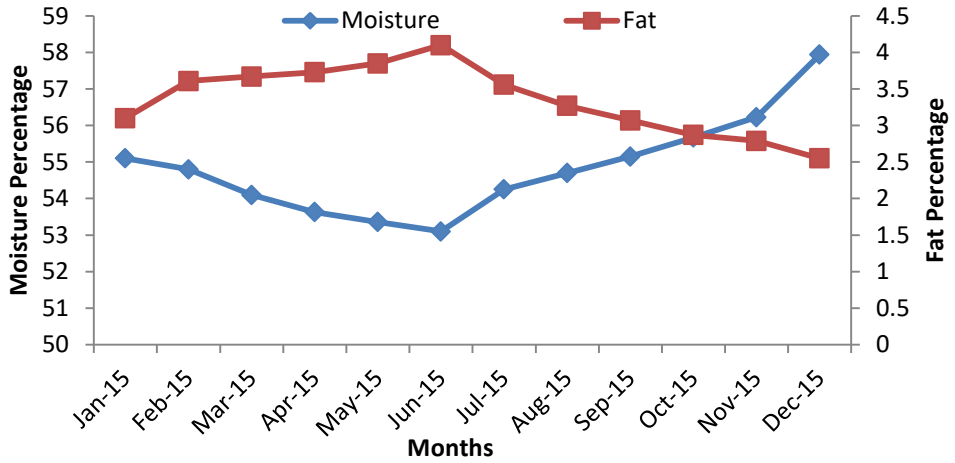

Fig. 03. Monthly fluctuations in the percentage of moisture and fats in the male liver of *P. sarana*

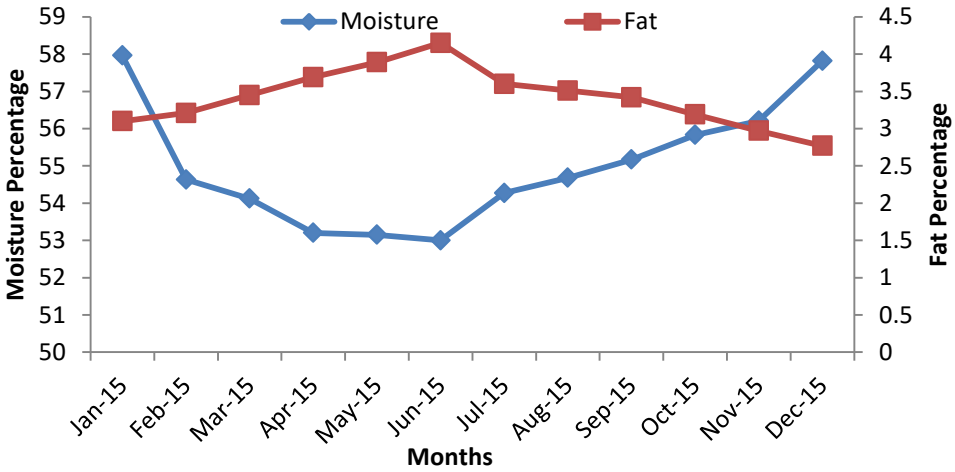

Fig. 04. Monthly fluctuations in the percentage of moisture and fats in the female liver of *P. sarana*

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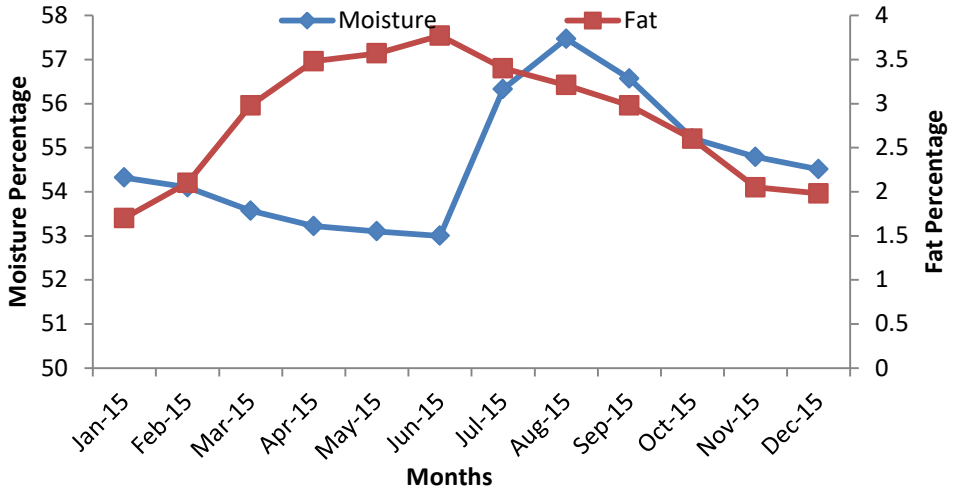

Fig. 05. Monthly fluctuations in the percentage of moisture and fat in the ovaries of *P. sarana*

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