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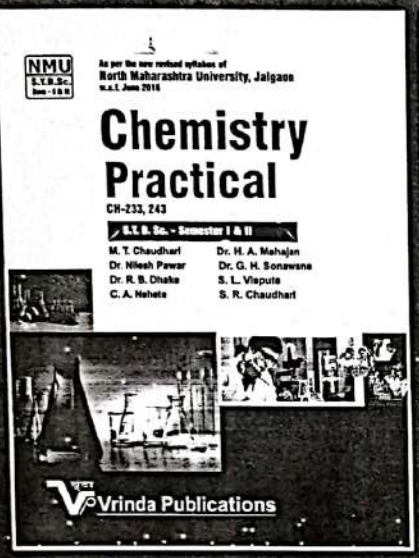

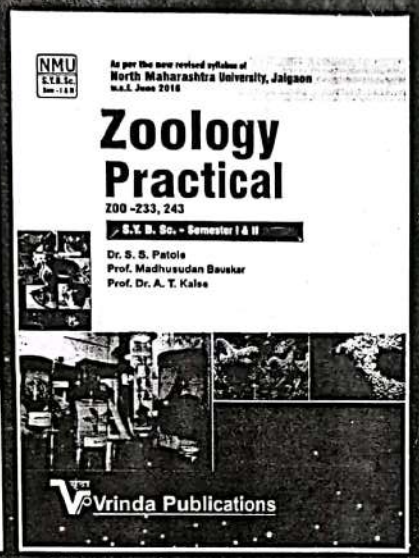

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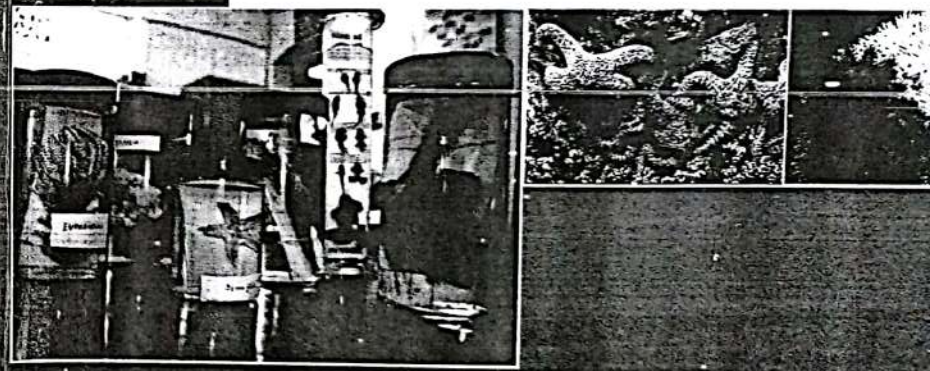

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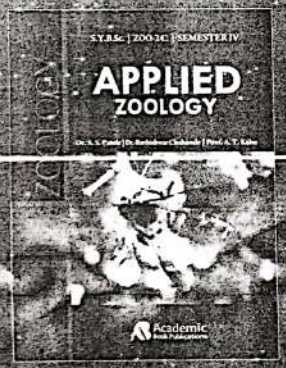

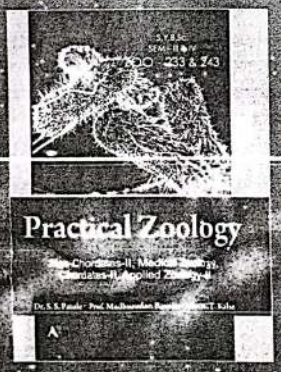

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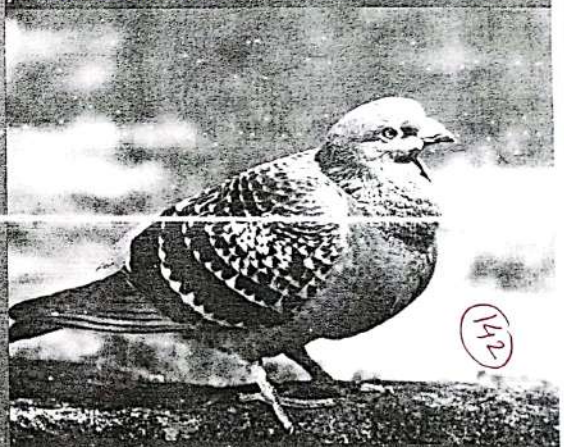

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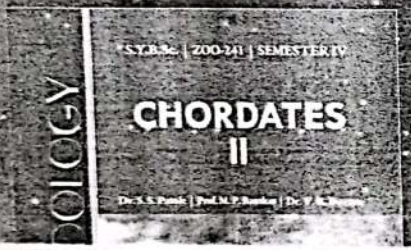

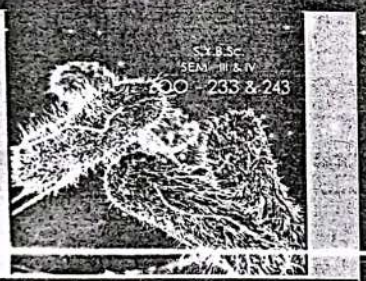

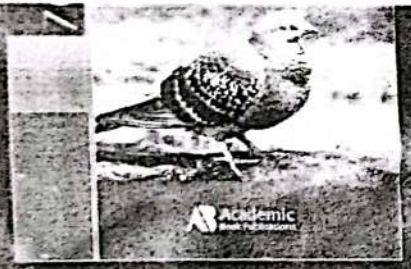

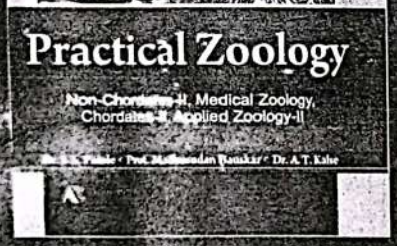

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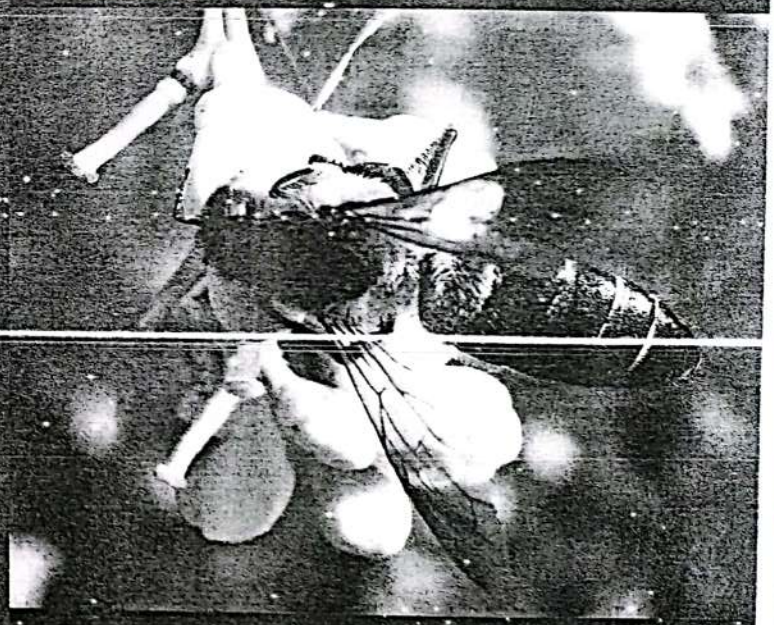

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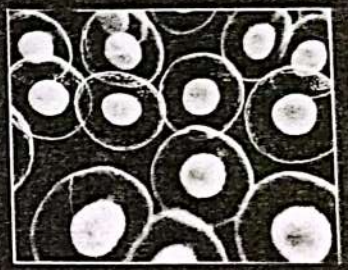

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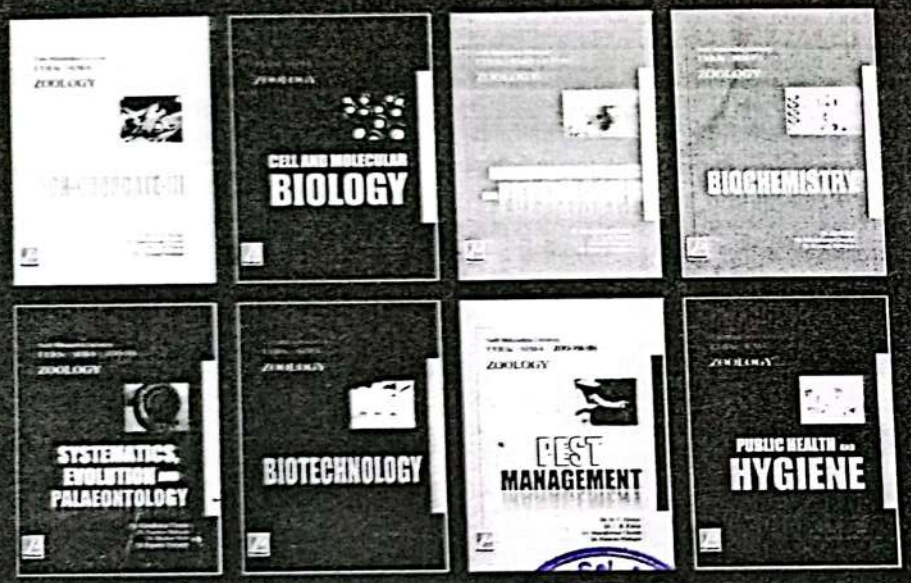

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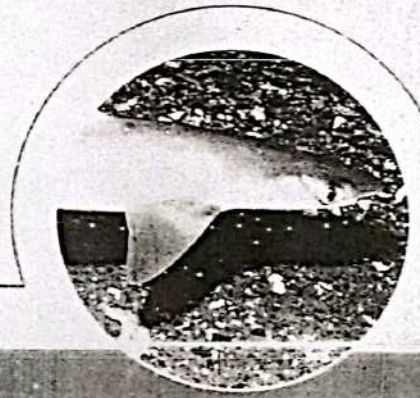

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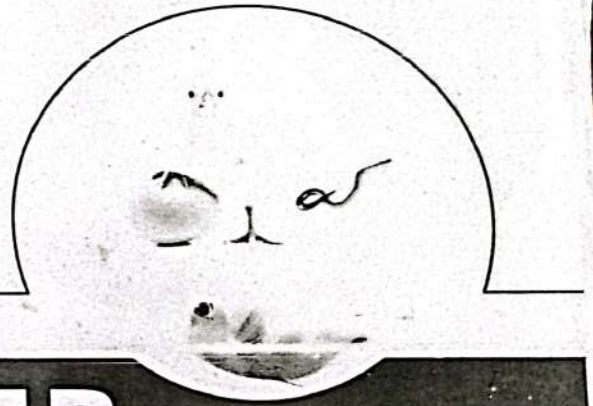

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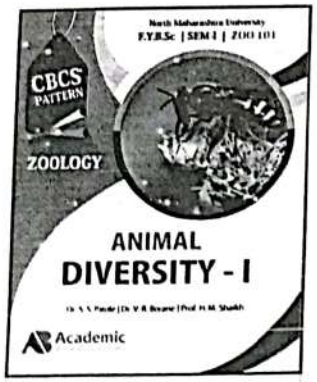

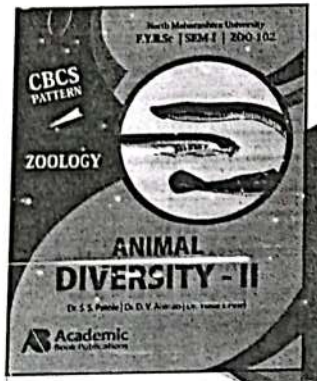

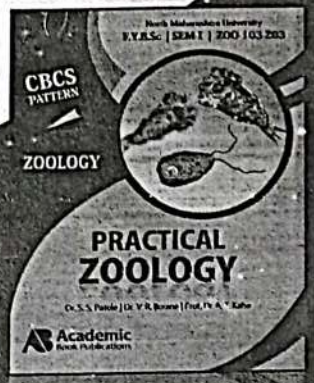

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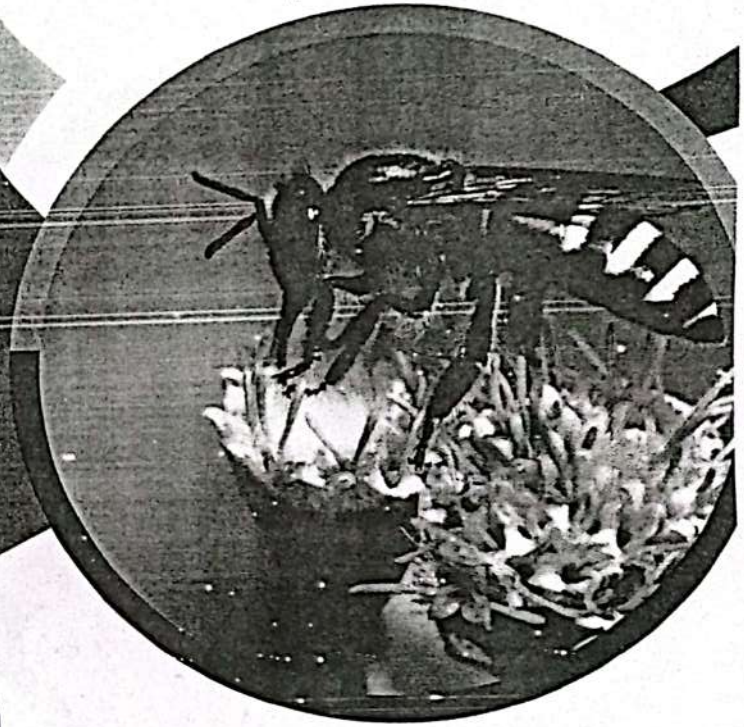

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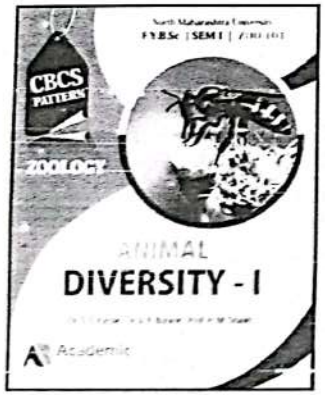

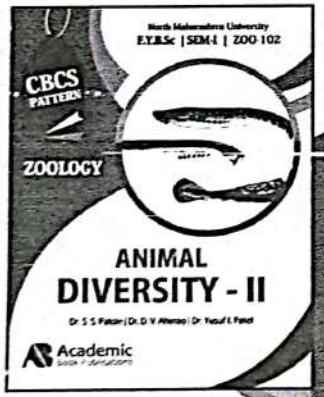

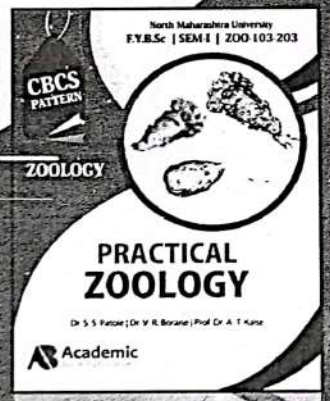

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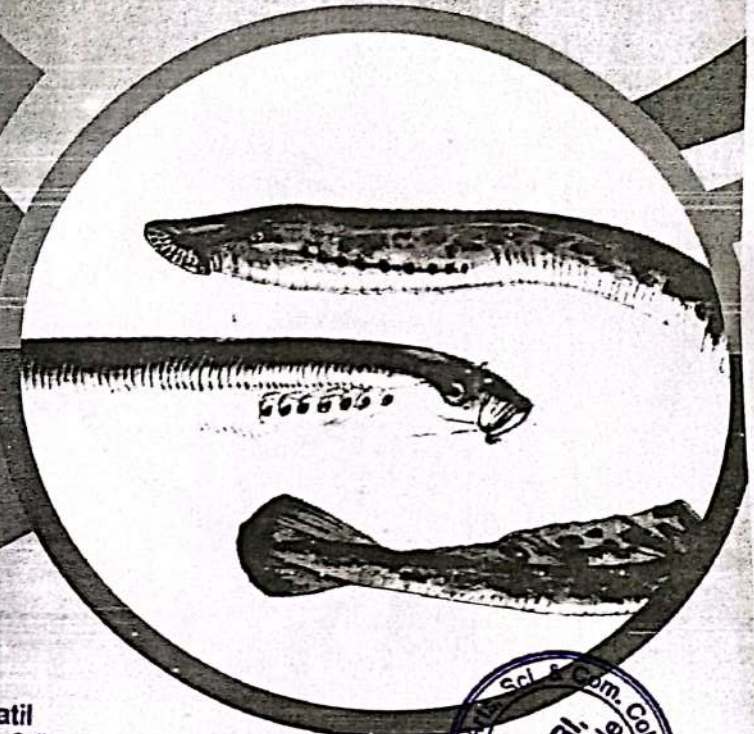

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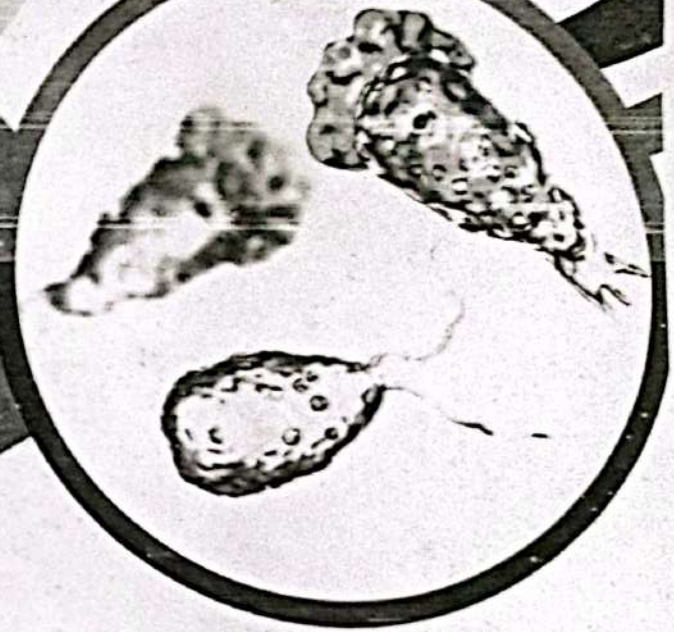

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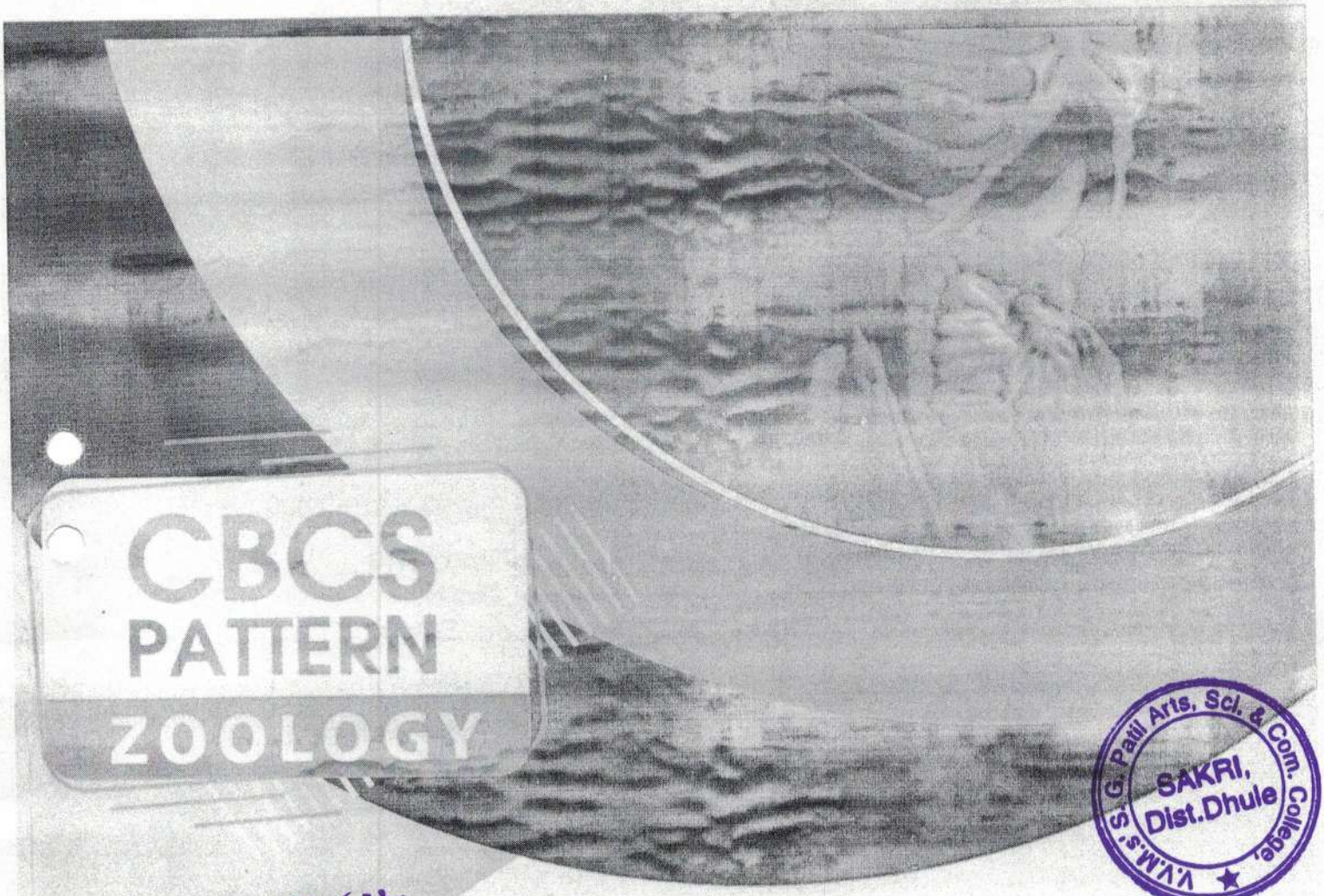

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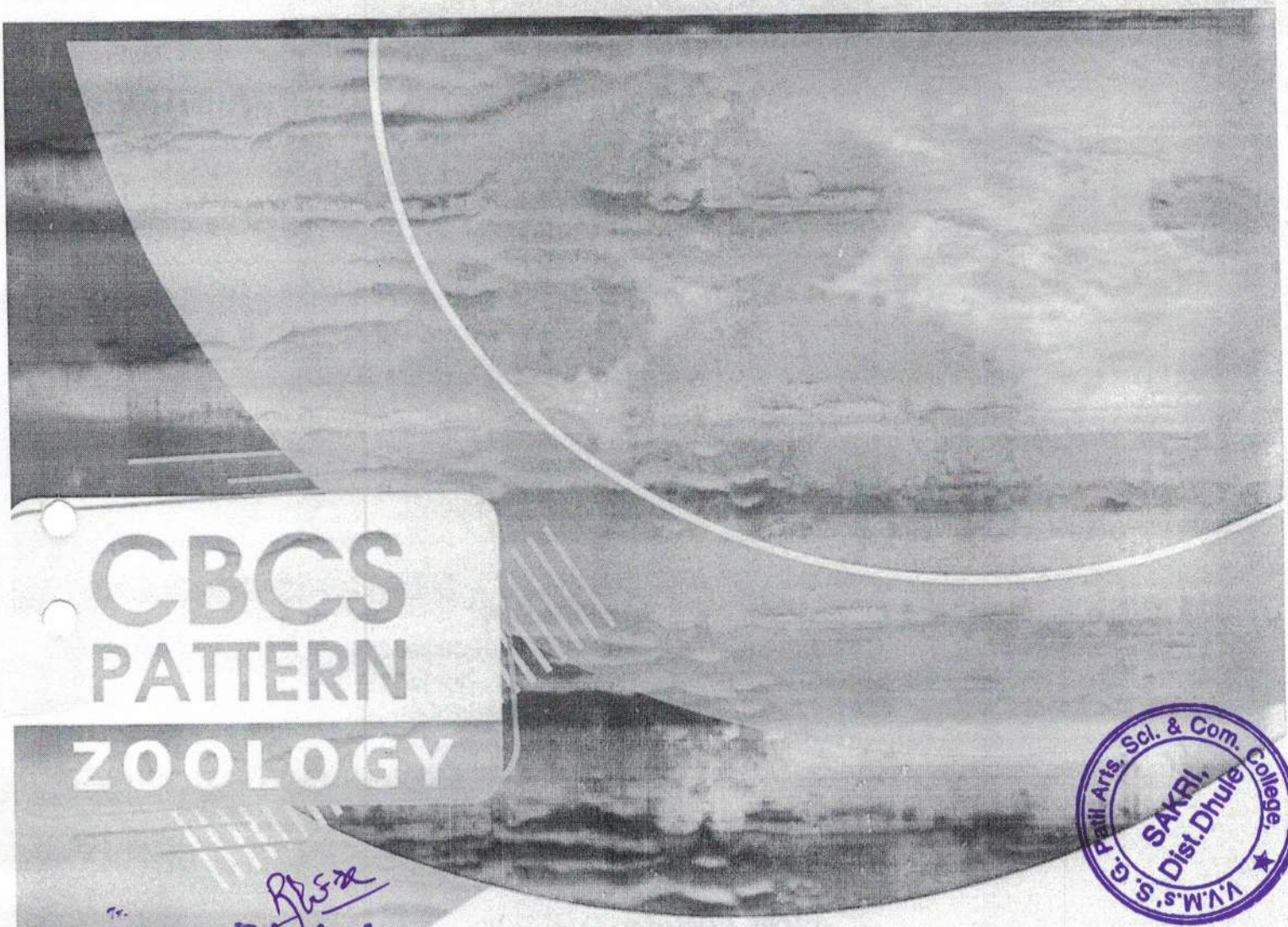

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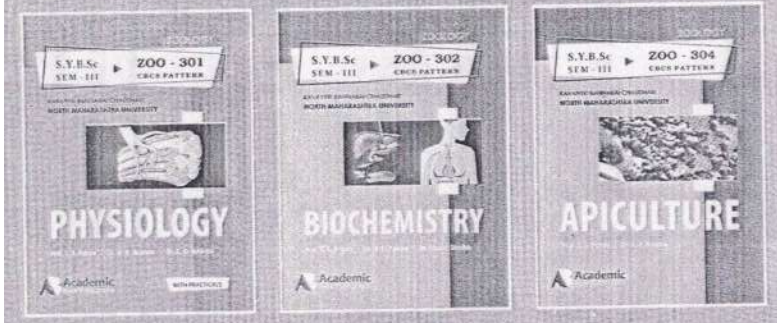

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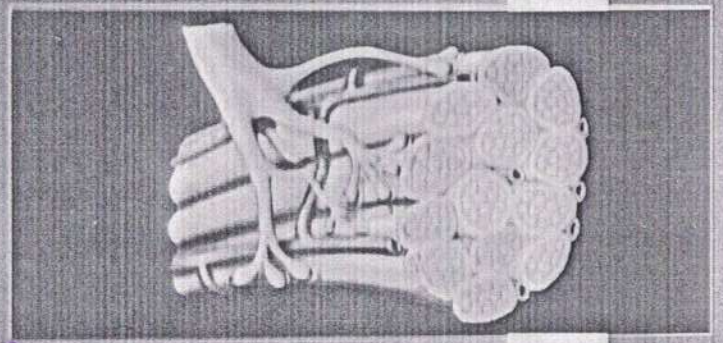

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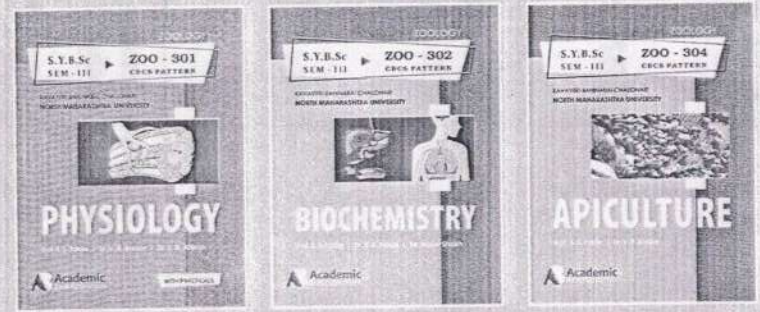

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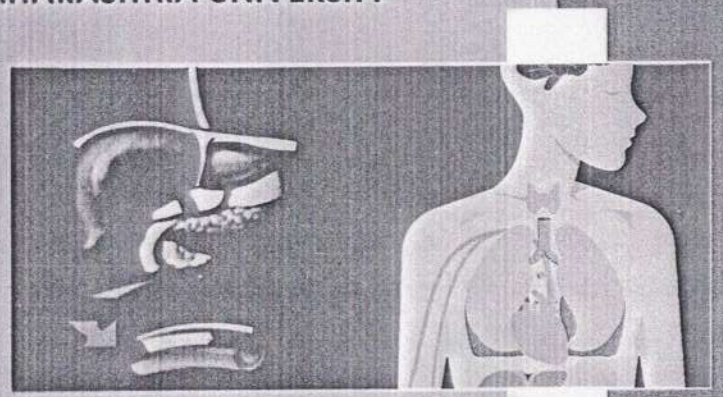

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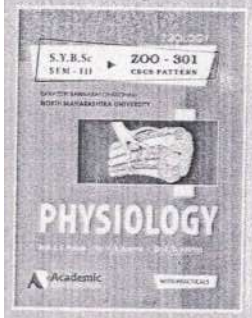

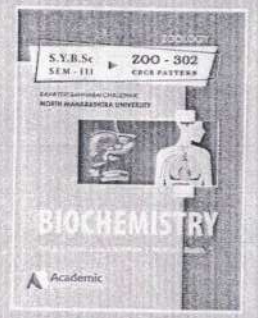

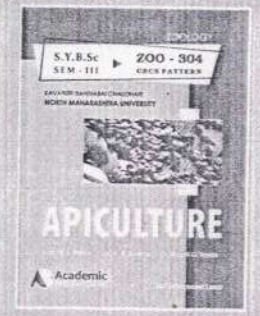

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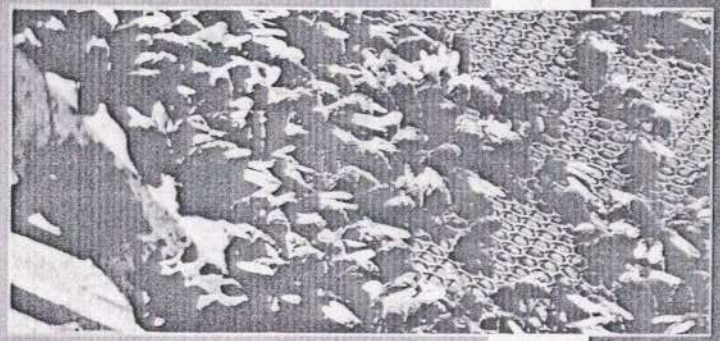

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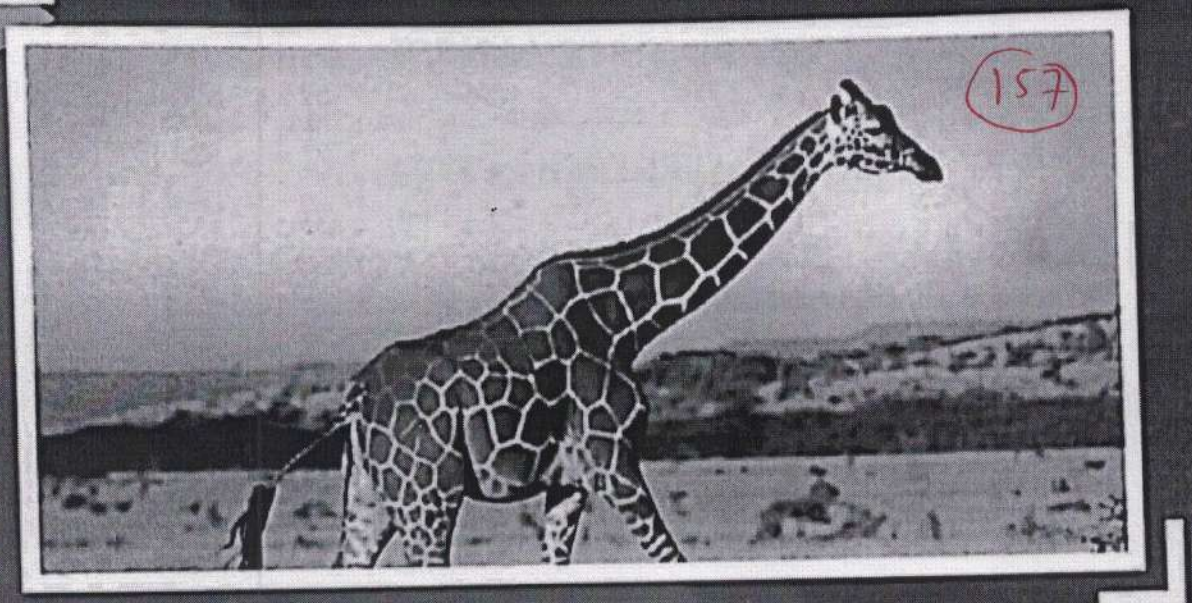

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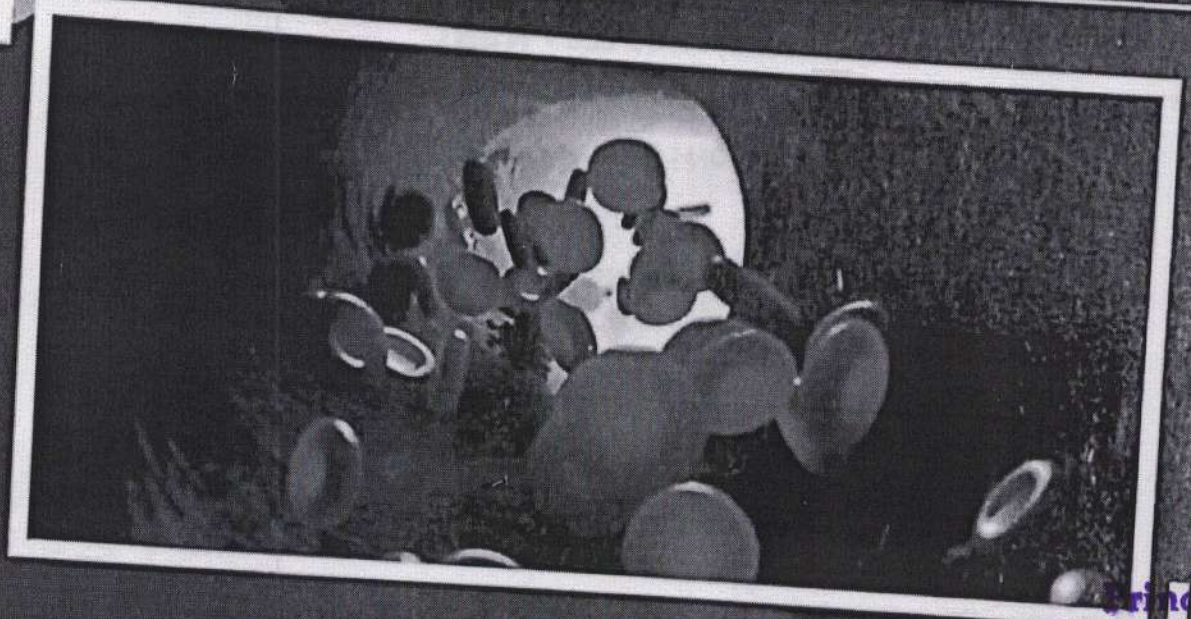

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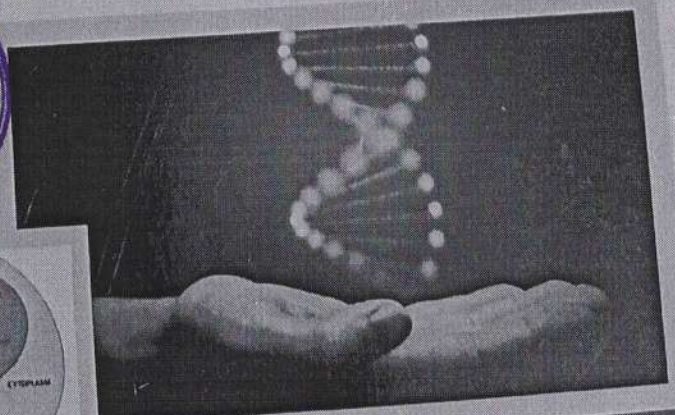

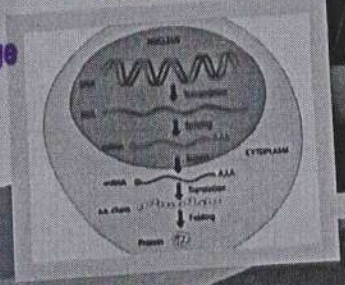

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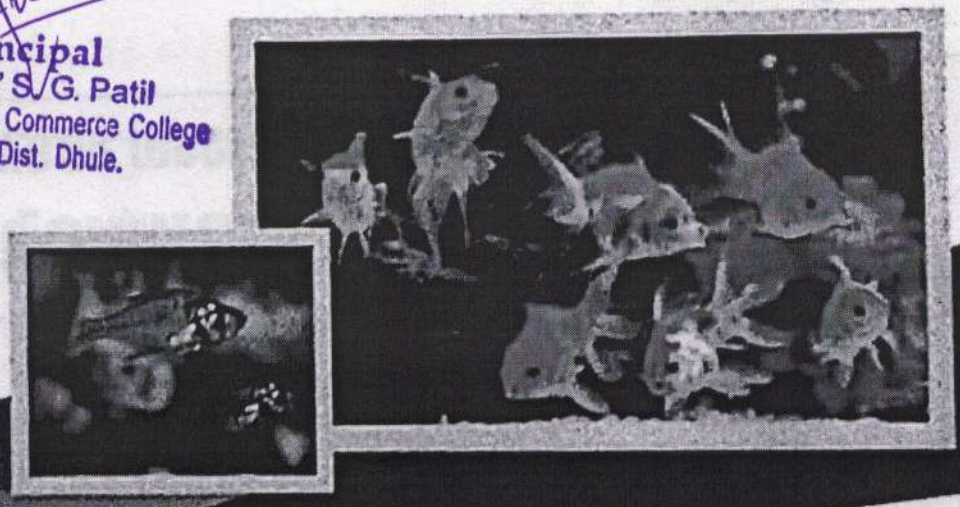

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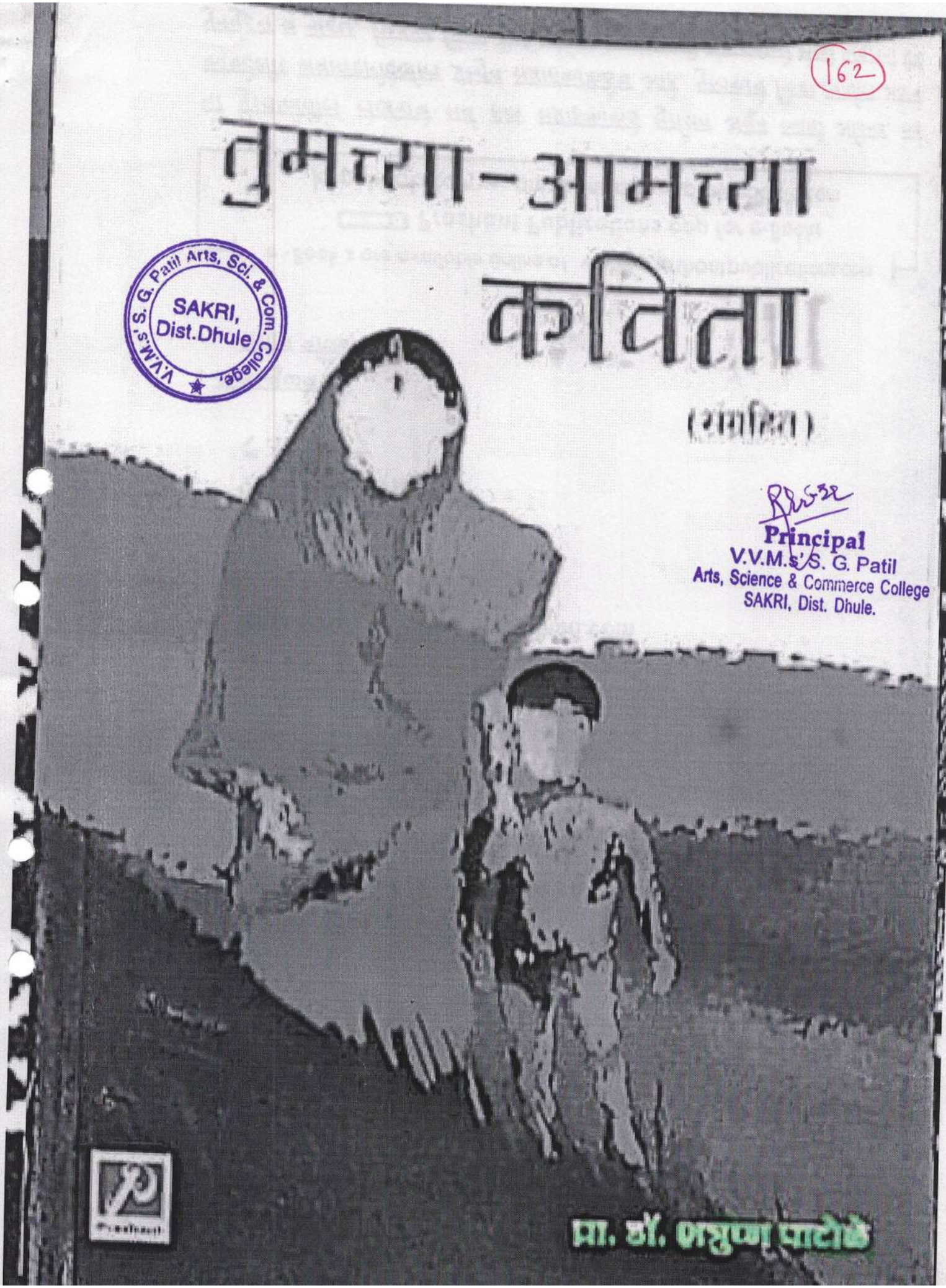

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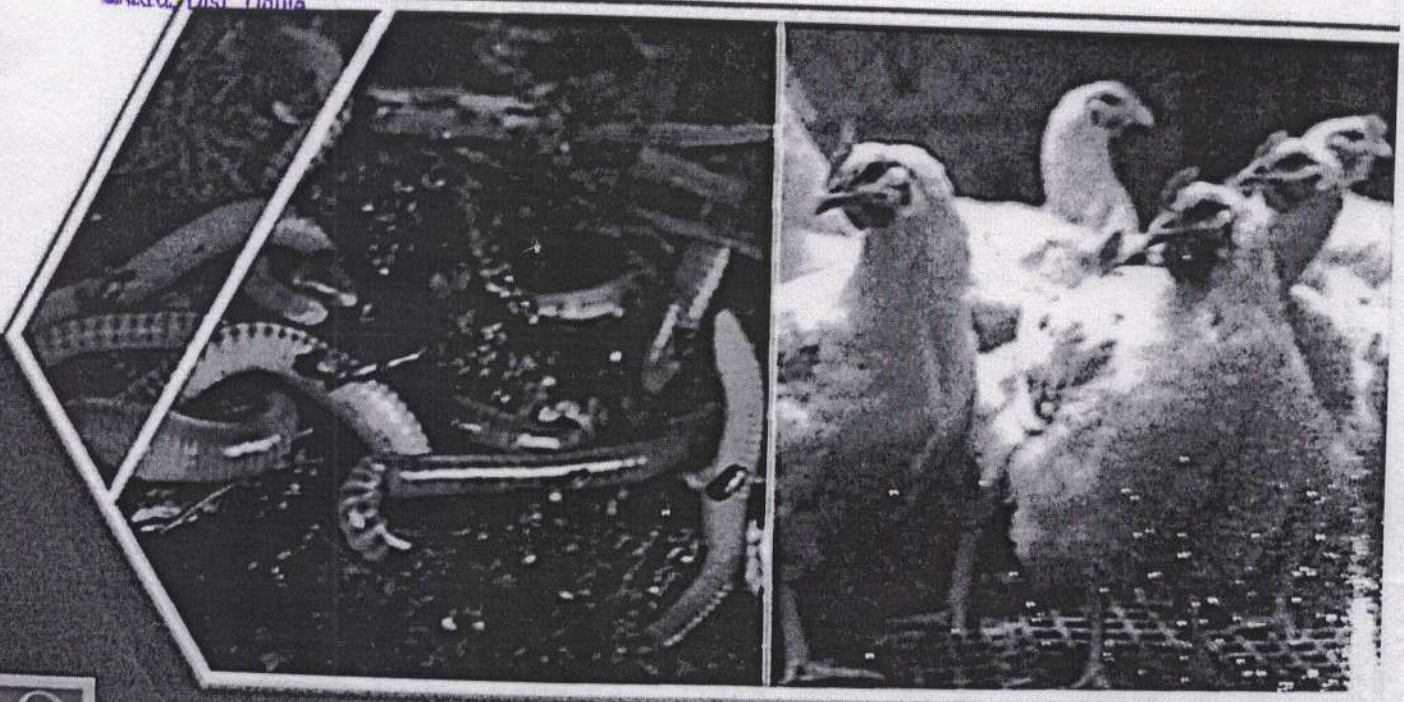

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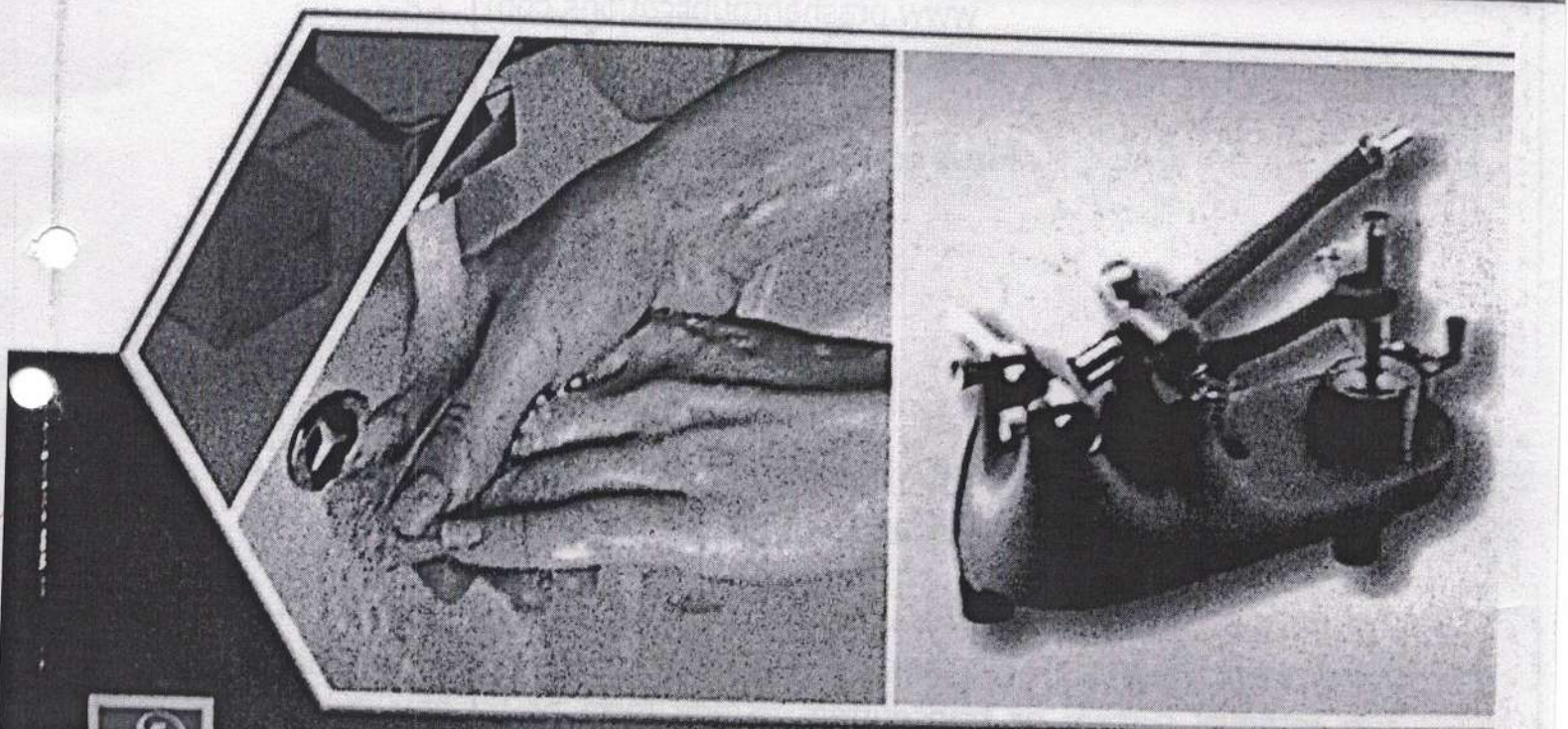

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studies reported outcomes of yoga intervention for at least four weeks or more on civil population has got a significant results but some studies which are short term yoga intervention has not got a significant results (Balginder Singh 2015).

Studies by Jayaram Gadham et al., (2015) and Vijay Tundwala (2012) found that the BMI and lipid profile can be managed in the body with the help of yogic life style intervention. In the field of physical fitness the latest research have recommended that the yogic practices have very positive effects on the physical and physiological variables of layperson. Therefore this study was carried out to find the effects of yoga practices on physical-BMI and physiological variables-lipid profile of general obese people of rural background.

2. MATERIAL AND METHODS:

STUDY DESIGN:

In this study 50 subjects between the age of 20-60 years, of both sexes having overweight and obese were randomly selected by Yoga Committee and Department of Zoology, KNKP Sci. College, Pimpalner, Dhule (MH). Consent from subjects and ethical clearance was taken. Subjects were divided into two group viz. Yoga group and Non-Yoga group, 25 in each group.

EXCLUSION CRITERIA:

We excluded the subjects with smoking, alcohol consumption, suffering from any endocrine, hepatic, renal disease, hypertension, diabetes, lipid metabolism disorders, CVD and heavy exercises.

YOGA TRAINING:

All subjects were asked to practice same yoga and pranayama training for a period of 3 month. The Yoga intervention consisted of 80-90 min/day, 5 days in a week in Maratha Mangal Karyala, Pimpalner, Dhule (MH), India.

YOGA PROTOCOL:

In pranayama they were practicing Bhastrika, Kapalbhati, Bahya, Anulom-vilom, Brahmari, Udgeeth and Ujjayee. Asanas including Suryanamaskar and microexercises. Each class was started with Omkar chanting and other mantras for 5 min followed by Yogic jogging, 2-3 standing asanas like Tadasana, Konasana, Vrikshasana, Virbhadrasana, Katichakrasana and Suryanamaskar for 20 min. Again followed by Shavasana for 5 min.

Then all subjects were practicing Pranayama Bhastrika for 5 min, Kapalbhati for 5 min followed by Asanas like Shalabhasana. Bhujangasana, Dhanurasana for 5 min.

Again they were practicing Anulom-vilom for 5 min followed by Asanas like Markatasana, Uttanpadasana, Pavanmuktasana, Setubandhasana, Halasana, Servangasana for 10 min.

Again pranayama Bahya 2-3 min, Ujjayee 2-3 min, followed by microexercises and sitting asanas like Mandukasana, Shasakasana, Ardhachandrasana, Ustrasana for 15 min.

Brahmri 2-3 min, Udgeeth 2-3 min followed by Sihasana, Hashyasana 2-3 min and finally one day class was completed with 5 min Shavasana at the end.

SAMPLE COLLECTION:

Weight and height for BMI and estimation for lipid profile were observed prior to initiation yoga training and after 3 month of yoga training. The fasting venous blood samples were drawn from the study subjects at the beginning and after 90 days of yoga training for analysis of lipid profile.

3. RESULTS AND DISCUSSION:

Table -I Effect of Yogic practices in Pre-obese and Obese rural subjects on BMI, TC, TG, HDL, LDL and VLDL.

Variables	Mean Values					
	Control Group-1 (n=20)			Yoga (Expt.) Group -2 (n=20)		
	Initial	Final (After 90 days)	% Relief	Initial	Final (After 90 days)	% Relief
BMI	28.67	28.57	0.34 % NS	29.23	26.8	2.83 % *
TC	208.2	208.0	0.1o % NS	207.4	182.8	11.86 % *
TG	186.6	186.2	0.21 % NS	187.8	164.6	12.35 % **
HDL	37.00	37.6	-1.62 % NS	38.9	45.1	15.93 % **
LDL	133.2	132.4	0.60 % NS	132.4	123.2	6.94 % *
VLDL	41.9	41.2	1.90 % NS	42.27	36.7	13.17 % **

NS (Non significant), * (Significant), ** (Highly Significant), BMI (Body Mass Index), TC (Total Cholesterol), TG (Triglycerides), HDL (High Density Lipoprotein), LDL (Low Density Lipoprotein). VLDL (Very Low Density Lipoprotein)

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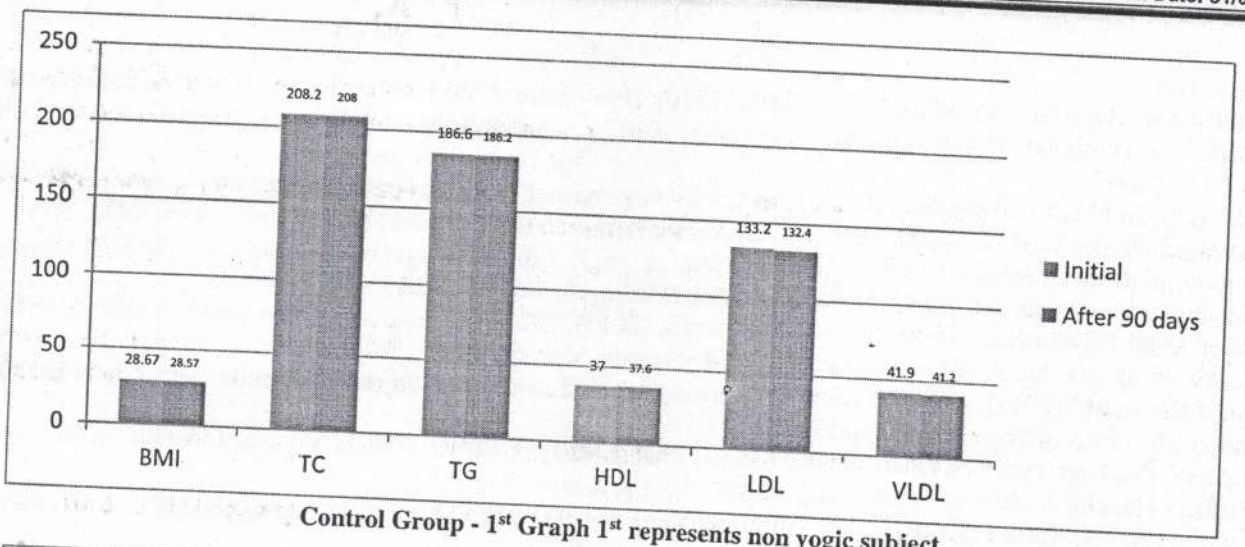
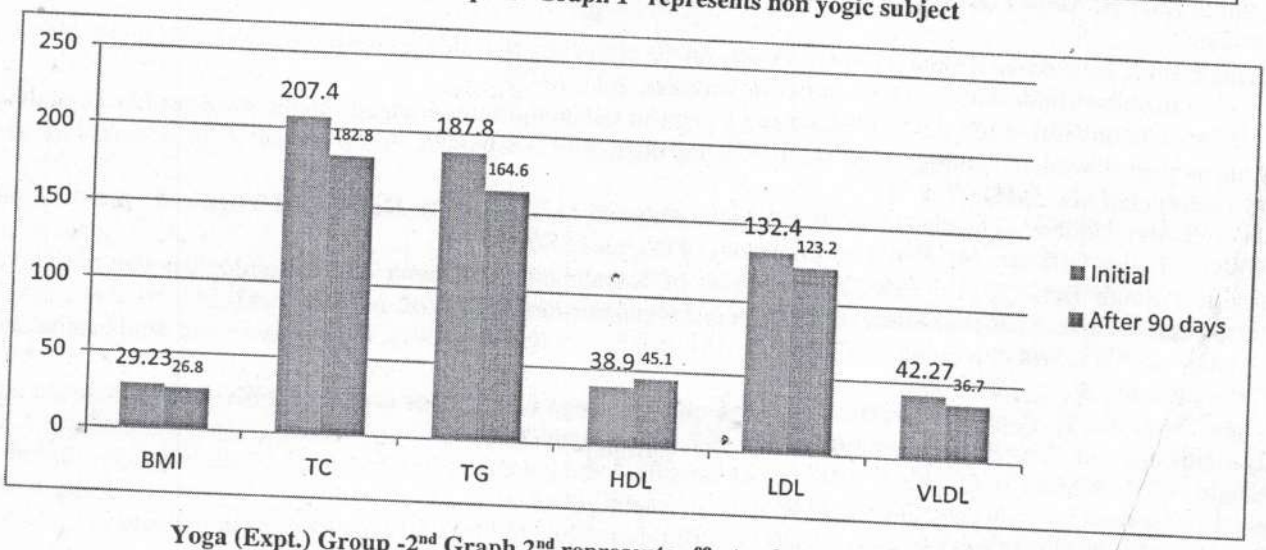


Control Group - 1st Graph 1st represents non yogic subject



Yoga (Expt.) Group -2nd Graph 2nd represents effects of yogic practices after yoga

The results of pre-obese and obese rural subjects on BMI, TC, TG, HDL, LDL and VLDL of control and experimental groups are represented in Table-1. Their values are represented in Graph-1 (Control Group) and Graph-2 (Experimental group).

This study show improvement in BMI in the study group which was at pre yogic treatment 29.23 and after 3 month of yoga therapy was 26.8 (2.83 % *) it was statistically significant. The results of this study are consistent with Shukla Ravi et al; (2016) they had observed BMI reduction from 31.54 to 30.77 ($p<0.001$) after yogic life style in pre-obese and obese subjects.

Similarly Nandre Y. M. et al., (2018), Seema Patel and Kamalhya Kumar (2016), Jayaram Gadham et al., (2015)and Vijay Tundwala et al., (2018). Studied effect of yoga asanas including pranayama by conducting 6 weeks to 12 weeks yoga training program and they observed significant reduction in body mass index, reduction in the blood serum level on TC, TG, LDL, VLDL.

In this study lipid profile i.e. total cholesterol decreased from 207.4 mm/dl to 182.2 mm/dl (11.86% *) triglycerides decreased from 187.8 mm/dl to 164.6 mm/dl (12.35% **), HDL increased from 38.9 mg/dl to 45.1 mg/dl (15.93% **), LDL decreased from 132.4 mg/dl to 123.2 mg/dl (6.94 % *), VLDL decreased from 42.27 mg/dl to 36.7 mg/dl (13.17% **). All the above results in the study group after 3 months are significantly improved. Pai A et al., (2011) also have observed a significant reduction in BMI ($p<0.04$) after 6 months of yoga intervention and observed the significant decreases in TC, TG, LDL and also Body fat, SBP and DBP.

Result of this study consistent with following studies, Abhishek Chaturvedi et al., (2015) observed the biochemical profile in perimenopausal in women that significant decreases TC ($p=0.06$), LDL ($p=0.04$), Fasting blood sugar ($p=0.05$) and significantly increases TC/HDL ratio ($p=0.002$) and TSH. Similarly BV Surendra (2014) also found statistical significant improvement in lipid profile that was reduction in TC, TG, LDLand VLDL and significant elevation of HDL in 3 months study.

The short term study (30 days) of P. Leela et al., (2013) also showed improvement in lipid profile as TC, TG, LDL decreased and HDL increased. The long term study (2 Years) of Meher Arati et al., (2015) also found that there was significant rise in HDL and significant fall in TC, TG, LDL, and VLDL in both men and women.

3. CONCLUSION:

In nutshell, the study showed that there is significant benefit on the risk factors of obesity, dyslipidemia. Therefore this type of old but as gold Indian life style modification if properly practiced definitely that would be a boon for human society. These life style modifications will be also encouraging in the decline of the complications of the obesity and dyslipidemia.

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Seasonal Variation, Diversity Indices and Correlation Of Phytoplanktons from Nakana Lake, District Dhule (MS) India

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Abstract: Present study discovered the incident of 38 phytoplanktonic species during two years. Amid these 17 species of Chlorophyceae, 9 species of Bacillariophyceae, 9 species of Cyanophyceae and 3 species of Euglenophyceae were observed. The total density of phytoplanktons were recorded as (8152/l) and (7656/l) with significantly significant seasonal variation in year 2014-15 and 2015-16 respectively. Total density was decreased in next year as compare to first. Maximum density of phytoplankton found in summer season, moderate in winter and in monsoon it was least in condition. Spirogyra spp, Fragillaria capulina, Lungbya and Euglena pisciformis, were showed dominant position from each phytoplanktonic group. Total 6 diversity indices were estimated among them Shannon-Weiner Index (363.5157) and (344.3082), Simpson's Dominant Index were (0.0775) and (0.0429). Physico-chemical parameters like pH, Turb, TDS, EC and O_2 were positively correlated however Temp, Free CO2, TH, Ca^{++} and Mg^{++} were negatively correlated with phytoplanktons.
***Key words:** Chlorophyceae, Euglena pisciformis, Simpson's Dominance Index*

1. INTRODUCTION:

Phytoplanktons are drifting or floating organisms that live in all aquatic habitats i.e. fresh, Marine as well as estuarine water., (Sharma, 2010). Few are having capability of self-regulation as compare with who those are float with water. First tropic level starts from phytoplankton because they are autotrophs and form the basic link in the food chain of all aquatic animals. They are expansively detained that predominantly significant to the food web of aquatic ecosystem. Phytoplanktonic diversity plays a key role in aquatic habitat, (Devi *et al.* (2016). No systemic analysis has been carried out regarding seasonal fluctuations and diversity and dominance analyzes by diversity indices of phytoplanktons from Nakana Lake. In sort to fill up this lacuna, present investigation had commenced.

2. MATERIAL AND METHODS:

The study area Nakana Lake was visited at monthly intervals during couple of year study between 7.00am to 9.00am, map of study area mention in fig.-1. By using 25mm mesh size plankton net 100 liters of surface water were sieve, net was washed with water by inverting it to collect the phytoplanktons attached to the net. Filtrate was taken in another sterilized bottle, labeled and for preservation 4% formalin was added. For further analysis sample were brought to the laboratory. 10 ml of sample was concentrated by centrifuging at 2000 RMP for 5 to 10 minutes. Quantitative analysis completed with the help of "Sedgwick–Rafter counting cell". The systemic identification of phytoplanktons was made by using standard keys of Edmondson (1959),Tonapi (1980)and Dhanpathi (2000) Determination of plankton density the average of 5 to10 counts was made and the result was expressed as number of organisms per liter (org/l) of sample water.

During study tenure i.e. Feb., 2014 to Jan., 2016, collected data were pooled for four months and three seasons and estimated for seasonal changes. After this, the Mean and standard Error of Mean (SEM) was calculated for each season and One Way ANOVA with various physico-chemical parameters were performed. The Pearson correlation was calculated by keeping plankton as dependant variable and other abiotic and biotic factors as independent variables with the help of SPSS 7.5 for windows.

3. DATA ANALYSIS OF DIVERSITY INDICES

Diversity Indices were estimated by Shannon and Wiener (1963); Simpson (1949); Margalef (1958) and Pielou (1966) methods.

1. Shannon – Weiner Index (H): $H= -\sum Pi (In Pi)$,
2. Simpson's Dominance Index (D): $D= \sum n(n-1)/N(N-1)$,
3. Simpson's Index of Diversity = 1-D,
4. Simpson's reciprocal Index = 1/D,
5. Margalef's Index (R): R= S-1/Ln (n)
6. Pielou's evenness Index (J): J = H/Ln*S

CYNOPHYCEAE:

Total 9 species were reported during tenure of research and it held on third position on level on ascendancy. Richness of species revealed difference in values, like (2087/l) (1943/l) in year 2014-15 and 2015-16. Group Cyanophyceae publicized variable values as reference to richness, highest population in month of January (201/l) and lowest at month of Aug. (149/l) in year 2014-15 whereas in year 2015-16 it was reported highest (189/l) in two months of Jan. as well as Mar. while lowest in month of July (136/l). Species dominance shown by *Nostoc spp.* (123/l) and least count by species *Oscillatoria chlorine* (15/l).

The population of group Cyanophyceae estimated significant seasonal variation ($F_{2\,44}$ 19.92) ($P< 0.01$) in year 2014-15 at the same time it was ($F_{2\,44}$ 12.24) ($P< 0.01$) in year 2015-16. Seasonal variation ranges maximum in summer (193.25 ± 3.00), moderate in monsoon (166.50 ± 3.79) and minimum in winter (162.00 ± 4.41) in year 2014-15 even as it was maximum in summer (184.75 ± 3.32), moderate in winter (152.25 ± 5.76) and minimum in monsoon (148.75 ± 7.12) n year 2015-16.

Cyanophyceaen members positively correlated with pH, Turb, CO_2, TA (One tailed) and TDS, EC, TH (Two tailed) at year 2014-15 as well as pH (One tailed) and Turb, TDS, EC, CO_2, TA (Two tailed) at year 2015-16. Negative correlation shown with parameters Temp, DO, Ca^{++}, Mg^{++} (One tailed) at year 2014-15 and Temp, DO, TH, Ca^{++}, Mg^{++} (One tailed) in year 2015-16. More abundance of Cyanophyceae group in summer season was recorded by Sivalingam (2018).

EUGLENOPHYCEAE:

Total 3 species were identified and detained on last position on level of supremacy. In the present investigation the seasonal numerical density of Euglenophyceae ranges from (552/l) and (504/l) in year 2014-15 and 2015-16 respectively. Richness of group Euglenophyceae given away up and downs in recorded values. Pick population observed in the month of Jan. (59/l) and it occurs least in the month of Nov. (26/l) in the year 2014-15. Just as in year 2015-16 it was pick in the month of July (58/l) and record buck in the month of Nov. (26/l). Species governance made known by species *Euglena pisciformis* was in June (106/l) and lowest in Oct. by *Euglena stellata* (27/l). Scarcity of population of this group was reported by Kathar *et al.* (2015).

In year 2014-15 the inhabitants of Euglenophyceae group exposed significant seasonal variation ($F_{2\,44}$ 12.4) ($P< 0.01$). It was lower in monsoon (33.50 ± 3.52), moderate in winter (49.50 ± 3.77) and higher in summer (55.60 ± 1.87) even as in year 2015-16 it was revealed significant seasonal variation ($F_{2\,44}$ 13.92) ($P< 0.01$). It was minimum in winter (30.25 ± 2.17), moderate in monsoon (46.50 ± 2.66) and maximum in summer (49.25 ± 3.30).

Correlation of Eulenophyceae with pH, Turb TDS, EC, CO_2, TA (one tailed) positive at year 2014-15 while same year they were Temp, DO, TH, Mg^{++} (One tailed) and Ca^{++} (Two tailed) were negative. Positively correlated parameters with Euglenophyceae were Turb, TDS, EC and pH CO_2, TA, TH (One tailed) Mg^{++} (Two tailed) even as Temp, Ca^{++} (One tailed) were negatively correlated at year 2015-16 respectively, Suresh (2015).

In both years, present study sequencing of the phytoplanktons on the basis of density in 4 groups like this, Chlorophyceae > Basillariophyceae > Cynophyceae > Euglenophyceae. The diversity and density point of view, group Chlorophyceae established abundantly. Basillariophyceae and Cynophyceae group were found modestly. Euglenophyceae observed was adequately. The density of phytoplanktons observed minimum in monsoon season due to raining, surface and agricultural runoff causing soil erosion is occurred and to end with turbidity increases, Komala *et al.* (2013). Nakana lake located at subtropical region so maximum sunlight penetrated in summer hence shows higher density in this season. Rest of season winter displayed moderate density because of minimum sunlight and temperature.

Species diversity of Euglenophyceae reported lesser but they found abundantly as compare to other groups. According to (Ghosh *et al.*, 2015) members of Euglenophyceae good biological indicators of organic pollution hence low pollution indicated by them. In present studies five organic pollution tolerant genera were listed out viz., *Oscillatoria, Chlorella, Nitzschia, Navicula* and *Euglena.* But all density of phytoplanktons was decreased at next year than earlier. So many studies have been carried out on the seasonal variations of phytoplanktons (Lokhande and Shembhekar (2009); Dalal and Nisal (2012); Sebastian and Thomas (2016).

DIVERSITY INDICES

No equal abundance and richness in every habitat, they are diverging in their relative occurrence. In particular area different kinds of organisms counting as their richness although resemblance of population of each species comprises evenness. When these above things are increases, automatically diversity increases. Diversity indices were calculated and obtained values were mention in Table- 4.

Species richness of phytoplanktons of Nakana lake was 38 at two year study period and abundance (8152) and (7656) in year 2014-15 and 2015-16 respectively. Shannon- Weiner Index was estimated in year 2014-15 (363.5157) and in year 2015-16 was (344.3082). Simpson's Dominance Index (0.0775) and (0.0429) while Simpson's Index of Diversity (0.9225) and (0.9571) ranges in between 0 to 1 in couple of year indicated that Nakana lake has richer in diversity and density of phytoplanktons. Simpson's Reciprocal Index were (12.9032) and (32.3100) whereas Margalef's Richness Index (4.1083) and (4.1372) in addition to Pielou's Evenness Index (99.9332) and (94.6529) in year 2014-15 and 2015-16 respectively. But point to noted at year 2015-16 all indices were declined except Simpson's Index of

FIG.-1. Map of the Study area, Nakana lake.

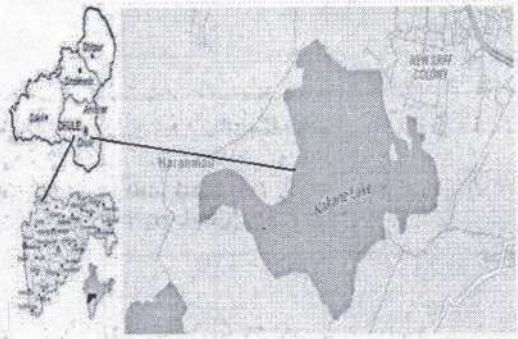

FIG.-2. Percent diversity of different groups of Phytoplanktons from Nakana lake

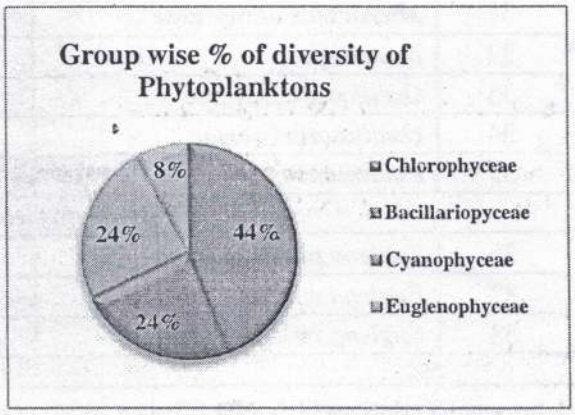

TABLE- 1. Percentage Of Diversity With Density Of Groups Of Phytoplankton.

Sr. No.	Name of Species	2014-15	2015-16
	Chlorophyceae (17)		
1	*Ankistrodesmus falcatus*	4.4	3.8
2	*Chara spp*	6.8	6.6
3	*Chlamydomonas conferta*	5.2	4.8
4	*Chlorella conglamerata*	6.7	6.7
5	*Chlorella valgoris*	5.4	4.9
6	*Cladophora spp*	6.3	5.6
7	*Closterium limneticum*	5.9	5.5
8	*Hydrodictyon spp*	4.7	4.9
9	*Micrasterias spp*	5.1	4.4
10	*Nitrela spp*	6.9	6
11	*Oedogonium patulu*	7.9	7.3
12	*Pediastrum duplex*	6.5	6.9
13	*Pediastrum simplex*	6.3	6.6
14	*Spirogyra spp*	7.3	7.8
15	*Ulothrix zonata*	6.1	6.4
16	*Volvox spp*	4.7	6
17	*Zygnema spp*	3.1	4.8
	Bacillariopyceae (9)		
18	*Bacillaria paradox*	10.1	10.8
19	*Diatom vuloare*	12.9	12.5
20	*Diatom spp*	13.5	13.4
21	*Fragillaria capurina*	13.7	13.9
22	*Navicula gracilis*	11.1	10.6
23	*Navicula viridula*	10.1	10.4
24	*Nitzschia subtilis*	10.5	10.2
25	*Pinnularia species*	9.7	9.7
26	*Synedra affinis*	8.1	8.1
	Cyanophyceae (9)		
27	*Anabaena constrict*	11.5	11.6
28	*Anacysitis spp*	11.5	11.4

TABLE-4, phytoplankton species richness, abundance, diversity and dominance indices of Nakana lake.

Sr. No.	Index	2014-15	2015-16
1	Species Richness	38	38
2	Species abundance	8152	7656
3	Shannon-Weiner Index	363.5157	344.3082
4	Simpson's Dominance Index	0.0775	0.0429
5	Simpson's Index of Diversity	0.9225	0.9571
6	Simpson's Reciprocal Index	12.9032	32.3100
7	Margalef's Richness Index	4.1083	4.1372
8	Pielou's Evenness Index	99.9332	94.6529

Where, S = Number of species
N = Total number of individual of all species.
Pi = A/T where A is number of each species in the sample,
T = Total number of individual of all species in the sample.
n = Total number of individuals of particular species.

TOTAL PHYTOPLANKTONS:

Diversity of Phytoplanktons was recorded with 38 species, mention in Table-1. They belong to four groups: Chlorophycae, Bacillariophyceae, Cynophyceae and Euglinophyceae. Species wise percentage includes Chlorophyceae (44%), Cynophyceae, (24%), Bacillariophyceae (24%) and Euglenophyceae (8%), shown in fig.-1. Seasonal variation in density of Phytoplanktons was shown in Table- 2. Phytoplanktons as biotic parameters correlated with abiotic parameters i.e. physico-chemical status of water. Estimated values were shown positive and negative correlation with each other, publicized in Table- 3.

The total density of phytoplanktons recorded (8152 / l) ($F_{2\,44}$ 12.94) ($p< 0.01$) in year 2014-15 and (7656/l) ($F_{2\,44}$ 20.69) ($p< 0.01$) in 2015-16. Seasonal variation ranges in between (2536/l) in year 2014-15 and in year 2015-16 shown (3039/l). The population of phytoplanktons estimated significant seasonal variation, in winter it was minimum (634.00 ± 25.59) (591.25 ± 23.26), moderate in monsoon (646.25 ± 2.52) (586.75 ± 11.43) and maximum in summer (759.75 ± 21.27) (736 ± 19.31) at 2014-15 and 2015-16 respectively.

Total phytoplankton density was positively correlated with pH, Turb, TDS, EC and TA at 0.01 (Two tailed) while free CO_2 at 0.05 (One tailed) and negative correlation shown with Temp, free CO_2 and Mg at 0.01 (Two tailed) TH and Ca^{++} at 0.05 (One tailed) in year 2014-15, same again in year 2015-16 it was positively correlated with Turb, TDS, EC and TA at 0.01 (Two tailed) while pH and DO at 0.05 (One tailed) whereas negative correlation at Temp., DO, TH, Ca^{++} and Mg^{++}, among these DO and Ca^{++} at 0.05 (One tailed), Borics *et al.* (2021)

CHLOROPHYCEAE:

Total 17 species of were identified from group Chlorophyceae. It was found in dominant quantitative composition at both years: (3062/l) (2921/l). The richness of the group Chlorophyceae ranges in between (208/l) to (326/l) observed in month of July and Nov. respectively in year 2014-15 while in year 2015-16 it was (202/l) month of Mar. and (329/l) in Nov. Recorded values express species dominance by species *spirogyra spp.* (94/l) and (96/l) in summer season 2014-15 and 2015-16 respectively on the other hand least count reported by species *Ankistrodesmis falcatus* (30/l) in summer at year 2014-15 and *Zygnema* was (22/l) in winter 2015-16.

The population of Chlorophyceae was recorded in minimum in monsoon (234.0 ± 7.51), moderate in winter (248.25 ± 19.51) and maximum in summer (285.25 ± 17.90). It shown non-significant seasonal variation ($F_{2\,44}$ 2.77) ($P> 0.05$) at year 2014-15 while it was in 2015-16 estimated minimum in monsoon (209.50 ± 8.88), moderate in winter (225.50 ± 16.45) and maximum in summer (295.25 ± 16.12), it shown significantly significant seasonal variation ($F_{2\,44}$ 10.29) ($P< 0.01$).

When group Chlorophyceae correlated with all water parameters, the observed values given away, pH and CO_2 (One tailed) whereas Turb, TDS, EC, TA, TH and Ca^{++} (Two tailed) were positively correlated as well as Temp, DO and Mg^{++} was negatively correlated (One tailed) at year 2014-15. However pH and CO_2 (One tailed) in addition to Turb, TDS, EC and TA (Two tailed) was positively correlated while Temp (Two tailed) and TH, DO, Ca^{++} and Mg^{++} were negatively correlated (One tailed), Jain *et al.* (2018).

BACILLARIOPHYCEAE:

Total 9 species were recorded during couple of year and pull off second position on level of dominancy. Species richness of this group was (2451/l) and (2288/l) in year 2014-15 and 2015-16 respectively. Range of richness of group Bacillariophyceae in between (174/l) (230/l) in the month of June and Dec. respectively in year 2014-15 whereas (161/l) in month July and Nov. it was (219/l) in year 2015-16. Species dominance from observed values was highest *Fragillaria capurina* (120/l) in summer season and lowest *Synedra affinis* (56/l) in Monsoon season in year 2014-15 even as *Diatom vuloare* highest (125/l) in winter season and lowest (56/l) in monsoon season.

Composition of this group was shown significantly significant seasonal variation ($F_{2\,44}$ 24.13) ($P< 0.01$) at year 2014-15 while it was ($F_{2\,44}$ 5.94) ($P< 0.01$) in year 2015-16. Recorded values displayed different seasons like, in summer it was maximum (231.75 ± 3.75), moderate in monsoon (190.75 ± 3.19) and minimum in winter (190.25 ± 6.79) at year 2014-15 then again in summer it was maximum (209.50 ± 5.69), moderate in winter (183.25 ± 9.02) and minimum in monsoon (179.25 ± 4.75) at year 2015-16.

Group Bacillariophyceae was shown positive and negative correlations as follows, pH and CO_2 (One tailed) and Turb, TDS, EC and TA (Two tailed) whereas Temp, DO, TH, Ca^{++} and Mg^{++} (Two tailed) in addition to pH, Turb, TDS, EC, DO, CO_2, TA (Two tailed) while Temp, TH, Ca^{++}, Mg^{++} (One tailed) at 2014-15 and 2015-16 respectively, Rawat and Trivedi (2018).

Diversity and Pielou's Evenness Index. Some studies agree with our work Kawade and Pandharkar (2016); Singh *et al.* (2016)

4. CONCLUSION:

In wrapping up, Nakana lake wires excellent diversity and density of planktons because the lake is manmade and built on Panzara River which was originated from hills. It is eternally afar from drainage of city, garbage and industrial effluents. But anthropogenic activities increased day by day hence physico-chemical parameters exposed seasonal fluctuations. Phytoplanktons are good indicators of these changes. They strongly affected and respond rapidly against water pollution. If care is not taken Nakana lake almost immediately suffer and develops into deteriorated habitation.

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29	*Lyngbya spp*	12.8	12.6
30	*Merismopedia punctata*	13.2	12.4
31	*Microcystis aerugenose*	11.8	11.2
32	*Nostoc spp*	12.8	15
33	*Oscillatoria chlorine*	4.7	3.6
34	*Oscillatoria limosa*	10.6	11.1
35	*Phormidium muciola*	10.5	10.7
Euglenophyceae (3)			
36	*Euglena pisciformis*	49	49.8
37	*Euglena viridis*	32.8	33.5
38	*Euglena stellata*	18.1	16.6

TABLE-2. Seasonal Variations in density (Mean ± SEM) of different groups of Phytoplankton (org /l) at Nakana Lake during Feb. 2014 to Jan. 2016.

Sr. No	Groups	Study tenure	Season wise value (Mean ± SEM)			F Value	P Value
			Summer	Monsoon	Winter		
1	Total Phyto.	2014-15	759.75±21.27	646.25±2.52	634.00±25.59	12.94	**
		2015-16	736.00±19.31	586.75±11.43	591.25±23.26	20.69	*
2	Chloro.	2014-15	285.25±17.90	234.00±7.51	248.25±19.51	2.77	NS
		2015-16	295.25±16	209.50±8.88	225.50±16.45	10.29	**
3	Bacillario.	2014-15	231.75±3.75	190.75±3.19	190.25±6.79	24.13	**
		2015-16	209.50±5.69	179.25±4.75	183.25±9.02	5.94	*
4	Cyano.	2014-15	193.25±3.00	166.50±3.79	162.00±4.41	19.92	**
		2015-16	184.75±3.32	148.75±7.12	152.25±5.76	12.44	**
5	Eugleno.	2014-15	55.60±1.87	33.50±3.52	49.50±3.77	12.4	**
		2015-16	49.25±3.30	46.50±2.66	30.25±2.17	13.92	**

TABLE -3. Pearson Correlations: Phytoplankton density with abiotic parameter in Nakana lake during Feb, 2014 to Jan, 2016.

Sr. No	Para.	T. Phyto.		Chloro.		Bacillario.		Cyano.		Eugleno.	
		2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16
1	Temp	-0.29*	-0.244*	-0.255*	-0.274**	-0.089**	-0.244	-0.453	-0.199	-0.124	-0.42
2	pH	0.701**	0.622*	0.650*	0.604*	0.654*	0.692**	0.643*	0.602*	0.545*	0.251*
3	Turb	0.804**	0.746**	0.746**	0.721**	0.892**	0.732**	0.651*	0.735**	0.507*	0.239
4	TDS	0.935**	0.787**	0.905**	0.780**	0.858**	0.826**	0.881**	0.702**	0.551*	0.366
5	EC	0.870**	0.790**	0.849**	0.779**	0.893**	0.815**	0.732**	0.690**	0.517*	0.426
6	DO	-0.600*	-0.580*	-0.581*	-0.564*	-0.697**	0.659**	-0.465	-0.445	-0.411	0.665
7	CO_2	0.646*	0.636*	0.578*	0.559*	0.544*	0.791**	0.636*	0.678**	0.643*	0.187*
8	TA	0.711**	0.735**	0.698**	0.697**	0.723**	0.686**	0.612*	0.680**	0.363	0.375*
9	TH	-0.951**	-0.373	0.954**	-0.407	-0.871**	-0.393	0.892**	-0.441	-0.512*	0.82*
10	Ca^{++}	-0.824**	-0.520*	0.819**	-0.523*	-0.877**	-0.560*	-0.633*	-0.515*	-0.681**	-0.024
11	Mg^{++}	-0.534*	-0.376	-0.498*	-0.361	-0.688**	-0.415	-0.32	-0.416	-0.491	0.142**

The P value for ANOVA is Non-significant if $P > 0.05$ (ns), significant if $P < 0.05$ (*), significantly significant (**) if $P < 0.01$ and highly significant if $P < 0.001$(***). At (••) Correlation is significant at the 0.01 level (two-tailed), whereas at (•) correlation is significant at 0.05 level (two-tailed).

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Study of Synchronise Effect of Cow Urine (Gomutra) and Yoga Therapy to Reduce the Hypertension in Obese Patients.

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Abstract: *Background: Hypertension and obesity are now greatest health problems in the developed world's, which are the major risk factors for CVD, kidney diseases and premature death. Use of cow urine has a special significance in the Indian tradition. Cow urine is a divine medicine because it contains all substances, which are naturally present in human body. So cow urine is used for the treatment many diseases. Yoga is also play an important role to maintain complete health. Yoga is a science, is a mind ,-body therapy has shown to be useful to patients with hypertension and obesity. So our Aim was observe beneficial effects of 2 months of cow urine and yoga therapy on parameters (Wt.,BMI, BP) in patients of hypertension with obesity. Method: 40 patients of hypertension with obesity, in the age group of 30-60 were selected based on exclusion criteria & are divided in to 4 groups, each group had 10 patients. In order to determine effectiveness of cow urine and yoga exercise, physiological parameters (Weight, height, BMI, Blood Pressure) before and after 2 months program were analyzed. Result: At the end of study, there was significant decrease in the mean blood pressure as well as weight and BMI by single cow urine, by yoga but, synchronise effect of cow urine + yoga was more significant to decrease in the mean blood pressure, weight and BMI. Conclusion: In the present research concluded that fresh Cow urine and yoga both having significant anti-hypertension and anti-obesity activity. Synchronise effect of both therapies are having more significant anti-hypertension and anti-obesity activity.*

***Key words**: Cow urine, Yoga, BMI, Blood pressure, Obesity etc.*

Introduction

Hypertension is one of the most serious negative health consequence associated with obesity [1]. Health is a basic human right of human being but we are not aware of this fact. So, one of the key element of health is Yog, which play an important role to maintain the complete health [2]. Hypertension is a major chronic lifestyle disease and an important public health problem worldwide. Yoga is a mind- body therapy and an alternative to medication; also contribute to an increased feeling of empowerment for patients in preventing and treating hypertension [3]. Yoga health benefits are curative as well as preventive. Yoga has been shown to have therapeutic benefits for individuals with a wide range of health conditions, including hypertension [4, 5].

Yoga provides one of the best means of self improvement and gaining full potential of one's body, mind and soul. It has been proved beyond doubt that pranayam and certain asanas are very important means for preventing and curing many ailments. Since 10 years, research studies have shown that the practice of yoga improves strength and flexibility and may help in control parameters as blood pressure, respiration, heart rate and metabolic rates [6].India is experiencing a rapid health transition, with large and rising burdens of chronic diseases. The prevalence of hypertension has been reported to range between 20-40% in urban adults and 12-17% among rural adults [7]. Hypertension and obesity are common in a large group of population worldwide. These people are at increased risk of cardiovascular, peripheral vascular and cerebrovascular disease. According to yogic belief, people can be relieved by the complications of hypertension and obesity by practicing yogic exercise [8].

High blood pressure is one of the most important preventable causes of premature morbidity and mortality in the world. Overall prevalence for the hypertension in India is 29.8%. Hypertension is a major risk factor for ischaemic and haemorrhagic stroke, myocardial infraction, heart failure, chronic kidney disease and premature death [9]. The cause of primary hypertension is not known, although genetic and environmental factors may affect blood pressure regulation [10]. Today, Yoga has acquired global recognition and exalted status as an ancient health building system. Regular practice of yoga reduces blood pressure, it also reduces body weight [11]. Yoga being a form of physical exercise is commonly translated as "union" and is the combination of heart mind and body. Practice of asana, pranayama and meditation results in reduced mental stress. Yogic practice and its beneficial effect have been observed on physiological and physical state of body and mind [12].

Gomutra has a great medicinal value and is very effective in the management of obesity [13]. Cow urine contains nitrogen, sulphur, phosphate, sodium, manganese, iron, silicon ,chlorine, magnesium, maleic, citric, tartaric and calcium salts, vitamin A, B, C, D, E, minerals, lactose, enzymes, hormones, creatinine and gold acids. Ingredients of cow urine are similar with human body. Hence consumption of cow urine is useful to maintain the balance of these substances and

cures incurable diseases [14]. In Ayurveda, there are many medicines made from cow urine, milk, dung, ghee and curds. This purifies and clears all blocks in the bodily channels [15].

Medicinal properties of Cow urine has been granted by US, as Patents (No. 6,896,907 and 6,410,059); bioenhancer, antibiotic, antifungal and anticancer agent properties are particularly mentioned in these patents [16]. Cow urine has a special significance in Indian tradition. Cow urine is said to have a spiritual cleansing effect as well. Cow urine has been described as water of life or "Amrita", nectar of the God. "Panchagavya" is a combination of cow urine, milk, dung, ghee and curd. In Charaka Samhita, Sushruta Samhita and Vangbhata, described cow urine that can be used in medicine and therapeutics. Urine can relieve Kaphaja and Vataja disorders [17].

So in this study we have observed comparative beneficial effects of Cow Urine and Yogic exercise for 2 months on hypertension in obese patients.

Objectives

1. To study the effect of yoga-pranayama on parameters of obesity viz weight reduction (there by reduction of BMI).
2. To study the effect of yoga-pranayama on blood pressure in the patients of hypertension.
3. To study the effect of gomutra (cow urine) on parameters of obesity and blood pressure in the patients of hypertension.
4. To study the synchronise effect of yoga-pranayama and gomutra (cow urine) on parameters of obesity and blood pressure in the patients of hypertension.

Materials And Methods

Inclusion criteria: Adult patients (an age group of 30-60 yrs.) of both sexes suffering from obesity (whose BMI > 30) and hypertension were selected for the present study.

Exclusion criteria: Patients suffering from other disorders like liver disease, pulmonary disease, malabsorption, thyrotoxicosis, diabetes, cardiac failure, pregnant females, lactating mothers, alcoholism and non- cooperative patients were excluded from the study.

Investigation: Weight , BMI and Blood pressure.

Selection of patients and duration of study: The study was counducted in Maratha Mangal Karayalay Pimpalner, District Dhule, Maharashtra, During Jan. – Feb. 2018. In present study 40 patients were included after scree- ning by inclusion and exclusion criteria for BMI,obesity and hypertension.. These patients were randomly segregated in to four groups, each group have 10 patients.

1. **Group-1 (Control group):** In this group, 10 obese and hypertensive patients were included and suggested them only diet restriction of 1600 Kcal/day and other lifestyle modification.
2. **Group-2 (Gomutra therapy group):** In this group, 10 obese and hypertensive patients were included and were given only pure Gomutra (cow urine) in dose ranging from 30 ml to 40 ml/day early in the morning with empty stomach for 60 days & diet restriction of 1600 Kcal/day.
3. **Group-3 (Yoga group):** In this group, 10 obese and hypertensive patients were included and suggested them for life style modification including specific Yoga techniques and diet restriction of 1600 Kcal/day.
4. **Group-4 (Gomutra + Yoga group):** In this group, 10 obese and hypertensive patients were included and were also given pure Gomutra (cow urine) in dose ranging from 30 ml to 40 ml/day early in the morning with empty stomach for 60 days and also suggested them for life style modification including specific Yoga techniques and diet restriction of 1600 Kcal/day.

The study protocol was ethically approved by the Institutional Ethical Committee. An informed consent of the volunteers was undertaken on an approved proforma. Control group-1 & Gomutra group-2 containing 10 subjects in each groups, which was not exposed to any yogic practices. Yoga therapy was introduced to the experimental group-3 & Group-4 for 90 min. six day in a week for o8 weeks (2 months).

The set of Asanas and Pranayama included in the course (10)

I. Humming in meditative postures- Sukhasana (Easy pose)/ Padmasana (Lotus pose) / Vajrasana (Thunderbolt)

II. Loosening Exercises- Warm ups: starting from head, working towards the toes.

Neck rolls, Shoulder rotation, Arm rotation, Elbow movements, Wrist movements, Finger movements
Waist movements, Knee rotation, Ankle rotation, Toe movements

III. Asanas - A Standing

(a) Konasan (Side bend pose) Tadasana, Ardhakatichakrasana (Lateral arc pose), Padahastasana (Forward bend pose),Ardhachakrasana (Backward bend pose),Vrikshasana (Tree pose),

(b) Sitting

1. Shashankasana (Forward bending),Mandukasana (Frog pose),Ustrasana/Ardhachandrasana(Backward pose),Vakrasana (Twist pose)/ Ardhamatsyendra -sana (Half-spine twist pose)

2. Paschimotanasana (Back stretch pose),Konasana (Angular pose)

(c) Lying on stomach (prone)

1. Makarasana (Crocodile pose),2.Bhujangasana (Cobra pose),3.Shalbhasana (Leg back bend),4.Dhanurasana (Bow pose)

(d) Lying on back (Supine)

1. Uthitapadasana (Straight leg raising),2. Markatasana (Twisting pose),3. Pavanmuktasana (Wind relieving pose),4.Setubandhasana (Bridge pose),5. Sarvangasana (Shoulder pose), 6. Matsysana (Fish pose)

IV. Deep Relaxation In Shavasana pose (Corpse pose)

V. Pranayama (Breathing practices)

1. Bhastrika,Kapalbhati (Short and strong forceful exhalation and inhalation happens automatically)
2. Anuloma-viloma(Alternate nostrilbreathing),Ujjai,Bhramari (Om Chating/ Honybee sound during expiration),Udgeeth (Chating of Om mantra)

VI. Deep Relaxation In Shavasana pose (Corpse pose)

VII. Hum0ming in meditative postures- Sukhasana (Easy pose)/ Padmasana (Lotus pose) / Vajrasana (Thunderbolt)

Anthropometric measurements- hight, weijht & blood pressure were measured.

Height: Height of the patient was measured up to an accuracy of 0.5 cm on a scale prepared on the wall. Patients were instructed to remove chapels or shoes and stand on a flat floor by the scale with feet parallel and with heels, buttocks, shoulders and back of the head touching wall upright. The horizontal plate was gently lowered on the scalp to give correct height.

Weight: Weight of the patient was taken up to an accuracy of 0.5 kg. Patients were asked to stand on the centre of the platform after removing chapels and without touching anything else. Reliability of weighing machine was verified initially with known weight. It was adjusted to zero each time before taking weight. Same weighting machine was used for recording weight of the subjects throughout the study. **BMI:** BMI was calculated in Kg/m2.

Blood pressure : It was measured by an automated electronic device. Hypertension was categorized as BP systolic 120-139 mmHg & diastolic 80-89 mmHg as normal.

Hypertension- BP systolic >140 mmHg and diastolic >90 mmHg

Results

Table: 2 Comparison of weight, BMI & BP of control (G 1), Cow Urine Therapy (G 2),Yoga Therapy (G 3) and Cow Urine + Yoga Therapy (G 4). at before and after 2 months.

Objective	Control G 1				Cow Urine Therapy G 2				Yoga Therapy G 3				Cow Urine + Yoga Therapy G 4			
	Pre. 0M	Post 2M	MD	% Relife	Pre. 0M	Post 2M	MD	% Relife	Pre. 0M	Post 2M	MD	% Relife	Pre. 0 M	Post 2M	MD	% Relife
Weight (in Kg.)	73.66	73.41	0.25	0.33 NS	73.00	71.00	2.0	2.73 *	73.33	69.66	3.67	5.oo **	88.16	81.33	6.83	7.74 **
BMI (Kg m 2)	27.64	27.54	0.1	0.36 NS	28.13	27.34	0.79	2.80 *	27.oo	25.50	1.5	5.55 **	30.95	28.43	2.52	8.14 **
SBP (mmHg)	152.16	152	0.16	0.16 NS	154.0	150.o	4.0	2.59 *	155.0	130.0	25	16.21 ***	155.33	122	33.33	21.45 ***
DBP MMHg)	106.83	106	0.83	0.77 NS	89.16	85.0	4.16	4.66 **	108.0	88.0	20	18.51 ***	111.16	82	29.16	26.23 ***

All values are expressed as mean score- Weight, BMI- Body Mass Index, SBP- Systolic blood pressure, DBP- Diastolic blood pressure and MD- Mean difference.

NS= Non Significant (P>0.05), Significant values: * P<0.o5, ** P<0.01, *** P<0.001.

40 patients were selected in this study and are categorized into four groups (as table 2) for Cow urine therapy, Yoga therapy and also Cow urine +Yoga therapy are carried out to reduce weight, BMI and BP. Table 2 depicts the physiological parameters of the sample, the baseline and post assessment i. e. prior to starting only cow urine therapy, only yoga therapy

and cow urine + yoga therapy and after 2 months therapies. **Control G 1** depicts no significant reduction in weight 73.66 to 73.71 (MD 0.25, relief 0.33 NS), BMI 27.64 to 27.54 (MD 0.1, relief 0.36 NS) , SBP 152.16 to 152 (MD 0.16, relief 0.10 NS) & DBP 106.83 to 106 (MD 0.83, relief 0.77 NS). **Cow urine therapy G 2** depicts significant reduction in weight 73.00 to 71.00 (MD 2, relief 2.73 *), BMI 28.13 to 27.34 (MD 0.7 , relief 2.80 *), SBP 154.00 to 150.00 (MD 4, relief 1.59 *) & DBP 89.16 to 85 (MD 4.16, relief 4.66 **).**Yoga Therapy G 3** depicts more significant reduction in weight 73.33 to 69.66 (MD 3.67, relief 5.00 **), BMI 27.00 to 25.50 (MD 1.5, relief 5.55 **), SBP 155 to 130 (MD 25, relief 16.21 ***) & DBP 108 to 88 (MD 20, relief 18.51 ***) these results are more significant than that of above cow urine therapy group. **Cow urine +yoga Therapy G 4** depicts more significant reduction in weight 88.16 to 81.33 (MD 6.83, relief 7.74**) , BMI 30.95 to 28.43 (MD 2,52, relief 8.24**), SBP 155.33 to 122 (MD 33.33, relief 21.45***) and DBP 111.16 to 82 (MD 29,16, relief 26.23 ***) and these were better results than that of only cow urine & only yoga therapy groups.

DISCUSSION

The outcome of this study are consistent with Naveen kumar Saini (2016), Dhara Doshi et al; (2012) they had observed significant weight reduction after Gomutra therapy and Yogic lifestyle intervention[13,18].Shukla Ravi et, al; (2016)[19], Guarracino, et al; (2006)[20] also showed that Yoga had a statistically significant role in controlling BMI and weight and even hypertension and mood. The results of this study are also consistent with Manchanda et al; (2000) they had observed weight reduction-6.8+-8.2% (p=0.0019) after lifestyle intervention in coronary atherosclerotic patients.[21] Similarly Jayram Gadham et al; (2015) studied and observed a statistically significant decrease in BMI and BP after 3 months of Yoga training [22] & Anapoorna K. & Vasantalaxmi K. also studied the effect of 3 months yoga training resulted in a significant reductions in all body weight measures such as decrease in BMI (0.001), WHR (0.001), SBP (0.01) & DBP (0.038)[23].

Raman Gokal et, al; (2007) studied positive impact of Yoga and Pranayama on obesity and observed that the effect on BMI appeared most pronounced among the severely obese patients (BMI>40 kg/m2), in them the mean BMI dropped by 5.5 kg (p=0.004, n=18) and the obese patients the BMI dropped by 0.62 kg (p=0.0,o12, n=135). Overall 56% of subjects lost weight[24].

Similar study by Subramanian S. et al, in 2012 have shown that 7 days Yoga training, significant decrease in WHR, systolic and diastolic blood pressure, weight, BMI, glucose and cholesterol[25]. Also another study by Telles et al in 2010 showed that 6 day reside -ntial program on diet and yoga decreased BMI (1.6%) and Waist and Hip circumference (1.7%) [26]. Singla et al; 20016 studied biological activities of cow urine and concluded that cow urine comes with a bunch of health benefits. It has anti-obesity effect is due to the presence of copper ions and it has also several different activities like antioxidant, anti-diabetic, wound healing property, immunomodulator, also acts as bioenhancer to increase the efficacy of various antibiotic nutrients and anticancer drugs. Cow urine therapy is capable of curing several curable and incurable diseases, so it is used for many health problems worldwide including India[27]. In study of Sanjay Sharma et,al; 2017 conclude that fresh cow urine and its distillate both are having significant anti-obesity activity against high fat diet induced obesity in Wistar rats[28].

Conclusion

Nowdays obesity and hypertension are big social problems which lead to many psychology-somatic disorders or diseases. It is noticed that obese and hypertensive subjects have many other problems and complications at emotional and psychological level. We concluded that 1) It can be asserted that intervened Cow urine therapy along with Yoga therapy showed a very good results i. e. decrease in weight, BMI and hypertension. Thus, we can say that Cow urine and Yoga has great medicinal value and are very effective in the management of obesity, hypertension and it can be prove cow urine and yoga are boon in today's life. 2) Domestication of Cow is a very common in rural areas. So collection of Cow urine from healthy indigenous varieties of cow will be the supportive business practices.

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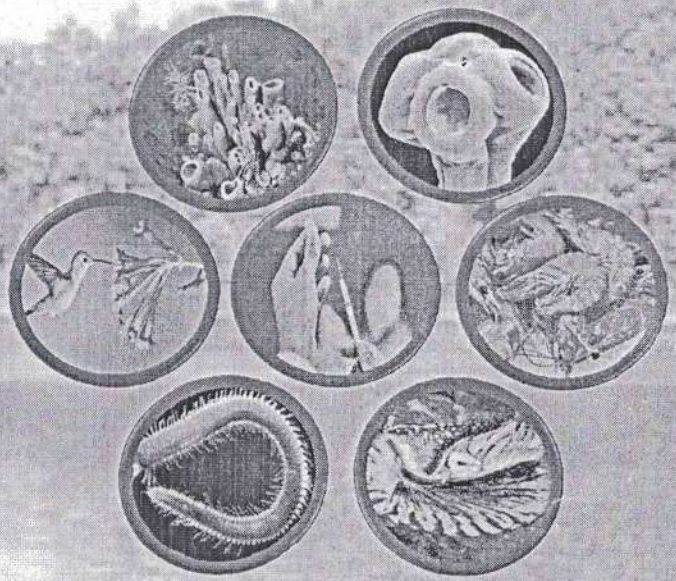

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Studies On Effect Of Yoga Practices On Obesity and Lipid Profile Of Rural People

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Abstract:
Background: *As an Americans in Indians obesity is the burning issue as health problems particularly in urban areas. About 30-70 % of urban people is either overweight or obese or has abdominal obesity. If BMI of the person is between 25 and 29.9 you are considered overweight and if BMI is 30 or over you are considered as obese. Generally body fat is accumulated on abdomen, thighs, buttocks and breasts may generate metabolic syndrome, diabetes, hypertension, arthritis and CVD.*
Objectives: *The main aim of this study was to observe the effect of yogic practices like yogic jogging, suryanamaskar, asanas and pranayama help to reduce BMI- obesity and correct the lipid profile with considerable health benefits.*
Method: *In this study 50 subjects between age of 20-60 years, of both sexes having overweight and obese were selected by Yoga Committee and Department of Zoology, Pimpalner. These were divided in to two group viz. yoga group and non-yoga group, 25 in each group.*
Time Line- *The yogic intervention consisted of 80-90 minutes daily, 3 months at Maratha Mangal Karyalaya, Pimpalner, Dhule (MH). BMI and lipid profile were observed prior to initiation yoga training and after 3 month of yoga training.*
Result: *It was found that there was significantly fall in BMI, total cholesterol (TC), low density lipoprotein (LDL), Very low density lipoprotein(VLDL), triglycerides (TG) and significant rise in high density lipoprotein (HDL) in both men and women.*
Conclusion: *Our finding indicates that yoga practices along with diet restriction is more beneficial in recovery of obesity/ BMI and lipid profile.*
Keywords: *Lipid profile, Obesity, Rural people, Asanas, Pranayama, Yoga Practices.*

1. INTRODUCTION:

Presentday is age of competition and speed has increased the stresses and strains. It is resulting change in life style and health problems such as obesity, diabetes, hypertension and cardiovascular diseases.

Obesity is the burning issue as an important health problem particularly in urban areas. About 30-70 % of adult urban is either overweight or obese or has abdominal obesity. If the BMI is between 25 and 29.9 you are considered overweight and if BMI is 30 or over are considered obese. Generally body fat is accumulated on abdomen, thighs, buttocks and breasts it may generate metabolic syndrome, diabetes, hypertension, arthritis and CVD (Shukla Ravi, et al., 2016). Yoga is the best solution to solve the above problems by free of cost, without any side effects (Bhaskar and Srinivasan 2015). A recent survey has suggested that 15 million Americans have practiced yoga at least one in all life. Yoga is a way of life and an ancient discipline designed to bring parlance and health to the physical, mental, emotional and spiritual dimension of individual which corroborates well with the WHO definition of health. Yoga comprises eight aspects as *Yam, Niyama, Asana, Pranayama, Pratyhara, Dharma, Dyane* and *Samadhi* (Daljeet Singh, et al., 2014 and Meher Arati, et al., 2015). Hence yoga and pranayama has been incorporated in to modern medicine during recent decades. Yoga is the best life style modification which aims to attain the unity of body mind and spirit through the yoga practices and meditation (Ankad, et al., 2011).

The some studies stating that there have been improvements as a result of long term exercises (Archana Mandape, et al., 2015, Daljeet Singh & Monika Verma, 2014, Bhaskar and Srinivasan 2015, Maini S, et al., 2014, Seema Patel & Kamakhya Kumar, 2016, Abhishek Chaturvedi, et al., 2015).

Among the various approaches to prevent and manage the obesity and lipid profile level yoga as a physical and mental activity conveys multiple well established health benefits (Shete Sanjay Uddav, et al., 2012). The previous