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RESEARCH ARTICLE

A COMPARATIVE STUDY OF HEMOGLOBIN STATUS AMONG TRIBAL INHABITANTS OF DOOARS IN NORTH BENGAL

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Abstract

The study was carried out to know the relationship of blood hemoglobin status among tribal inhabitants of Dooars. For the present study two hundred and forty male ranging between 17 to 23 years from four different tribes of Dooars were selected randomly from the whole population of the selected tribes.

Introduction:-

Indian tribal people play a key part in constructing the cultural heritage of India. They occupy a major part in the history of India as they are considered as the true habitants of India. The tribal people are scattered in different parts of India and they form a considerable number of the population of India. The traditional and cultural distinction of each tribal community has made them distinguishable from each other and their cultural and traditional heritage add colour and variation to the Indian culture as a whole and form a compact culture. Indian tribal people reside in approximately fifteen percent of the country`s area. They primarily live in various ecological and geo-climatic conditions ranging from plains, forests, hills and inaccessible areas that perhaps lie dotted in the panoramic Indian terrain**.**

While everyone readily accepts that evolution has turned out blacks with a genetic proclivity to contract sickle cell and Jews of European heritage who are100 times more likely than other populations to be afflicted with the degenerative mental disease Tay-Sachs, it is widely perceived as racist to suggest that blacks of West African ancestry have evolved into the world's best sprinters, Asians among the best divers, East Africans the premier distance runners, and whites the top weightlifters. Blacks who trace their ancestry to West Africa, including African Americans, hold more than 95 percent of the top times in sprinting. Whites are virtually absent from the top ranks of sprinting; though whites have traditionally done well in the longer endurance races, particularly the marathon, their ranks have thinned in recent years; Athletes from one country, Kenya, make up more than one-third of top times in middle and long distance races. North Africans do well at middle distances; Mexicans or Native Americans), are strongest at the longest races, 10,000meters and the marathon; East Asians are competitive only at the event requiring the most endurance, the marathon, and at ultra-marathons. It is a genetic stew, with studies indicating a mixture of genes from invading Arabs and Middle Easterners. One tiny district in Kenya, the Nandi, with only500, 000 people, sweeps an unfathomable 20 percent of major international distance events, marking it as the greatest concentration of raw athletic talent in the history of sports. Over the years there have been more than two hundred studies comparing the body composition of athletes. , Sprinters were the most muscular. Beginning at 400 meters on up to the marathon, athletes competing in these events were progressively less muscular in the upper body. Long-distance runners were generally small, short-legged, narrow-shouldered, and ectomorph, or lacking in muscle.

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Amongst competitors in both track and field events there are large significant racial differences. As nature would have it, different populations are better suited to excel at anaerobic activities such as sprinting, jumping, and lifting, than at aerobic sports such as distance running, cycling, and swimming.

We see these differences on the playing field but they are apparent at the micro level as well. In the mitochondria of cells, the body's powerhouse, oxygen combines with the glucose released by Carbohydrates and, eventually, fats to produce sustained energy. When the body demands quick bursts, it breaks down carbohydrates quickly, if incompletely. At roughly 400 meters, about 40-50 seconds of running for a top athlete, or 100 meters in swimming, the body has depleted much of its anaerobic capacity. That is the point at which anaerobic athletes experience an accumulation of lactic acid, the waste product of the muscles. If physical activity continues past this bio-physiological divide, the body begins to process energy more deliberately.Scientistsare definitive in their findings that athletes of West African ancestry are the most anaerobically efficient athletes, East African are the fittest aerobically, and whites fall in the middle. All seem to have certain natural anatomical advantages. Genetics role in athletic performance is a long debated subject. People of a certain race or genetic background seem to perform better ascertain sports than others. It is evolution that is likely responsible for genetics role in athletic performance. This would point to environment as a major factor, not just in short-term or single lifetime terms, but over many generations, for athletic performance. Part of a race or tribe that over many tens of thousands of years has to, out of necessity or need for survival, engage in certain regular behaviors then over time genetics are altered through the process of evolution to more efficiently perform these tasks of necessity. That’s the theory anyway, it makes sense but is not entirely proven.

Dooars in Jalpaiguri is a land of diverse ethnic communities, being a home to different tribal communities and immigrant people from neighboring states and countries; Dooars has a number of distinct languages and Dialects. This is also home to aborigines. Their ethnic identity, linguistic plurality, physical variations, food habits, rituals, mores, lineage, ethos all have drawn researchers, both at the national and international levels. Their origin, socio-cultural traits and religious beliefs are documented by anthropologists.

Materials and Methods:-

Participants

This study was carried out to compare theblood hemoglobinlevel among tribal inhabitants of Dooars. For the present study two hundred and forty male ranging between 17 to 23 years from four different Tribes of Dooars, namely Bhutia, Mech, Rabha and Totowere selected as subjects.The subject were selected randomly from the whole population of four different tribes.

Ethical consideration and procedureIn order to avoid ethical issues, all processes, including participant recruitment, research procedures, and methods, were confirmed by the institutional research ethics committee prior to the start of the study. After ethical approval, the parents of each subjects were contacted and informed about the study. If they gave consent for the researchers to approach them then, they were asked to set aside 15 min at the beginning of a session. Before the start of test, verbal and written instructions were given.

Measurement:-

Hemoglobin content of the blood was assessed by using Sahil's haemometer and recorded as gm. /100 ml of blood.

Analysis and interpretation of data the statistical analysis and interpretation of data pertaining to the score of blood hemoglobinhave been presented below. One way analysis of variance was used to find out whether there are significant differences among the tribes of Bhutia, Mech, Rabha, Toto on blood hemoglobin.Whether F value was found to be significant, LSD test was used as post-hoc test to determine which of the pointed mean different significantly. The level of significance was set at 0.05 level.

Table 1:- Blood Hemoglobin(gm. /100 ml.): Mean + SD of physiological variables of Tribal inhabitants of Dooars in North Bengal.

Tribe	N	Mean (gm. /100 ml)	Standard Deviation	Standard Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower	Upper		

					Bound	Bound		
Bhutia	**60**	**9.5583**	**1.67568**	**.21633**	**9.1255**	**9.9912**	**6.90**	**14.80**
Mech	**60**	**9.5655**	**1.57009**	**.20270**	**9.1599**	**9.9711**	**7.40**	**13.50**
Rabha	**60**	**11.5775**	**1.49101**	**.19249**	**11.1923**	**11.9627**	**7.90**	**14.23**
Toto	**60**	**11.8597**	**2.40583**	**.31059**	**11.2382**	**12.4812**	**7.90**	**16.56**
Total	**240**	**10.6403**	**2.11117**	**.13628**	**10.3718**	**10.9087**	**6.90**	**16.56**

Table 1 shows the mean and standard deviation of the physiological variables (Blood Hemoglobin) of the tribal inhabitants of Dooars in North Bengal in which tribes such as Bhutia, Mech, Rabha and Toto of 60 subjects each tribes respectively are considered. The table 01 further reveals the mean and standard deviation of the four tribes in selected Physiological variables are as follows:

Blood Hemoglobin: Bhutia (M, 9.55; SD, 1.67), Mech (M, 9.56; SD, 1.57), Rabha (M, 11.57; SD, 1.49) and Toto (M, 11.85; SD, 2.40) respectively.

Table 2:- Analysis of Variance of Physiological variables (Blood Hemoglobin in gm/100 ml) of Tribal inhabitants of Dooars in North Bengal.

	Sum of Squares	df	Mean Square	F
Between Groups	**281.463**	**3 236**	**93.821**	
Within Groups	**783.767**		**3.321**	**28.250***
Total				
	1065.230	**239**		

*Significant at 0.05 levels with df 3 and 239 are 2.64

The above table 02 shows the ANOVA (calculated by IBM, SPSS 20 version) for Physiological variables (Blood Hemoglobin)among of the tribal inhabitants of Dooars in North Bengal i.e. Bhutia, Mech, Rabha and Toto are as follows:

The following obtained 'F' value's for Blood Hemoglobin was 28.250. As the obtained 'F' values is greater than the table value of 2.64 with df 3 and 239 required for significance at 0.05 levels. The result of the study shows that there is significant difference among the tribal groups of North Bengal on BloodHemoglobin.

Since the obtained F-ratio is significant on Blood Hemoglobin among the four groups. So LSD Post Hoc test was applied to study the significance difference between the paired means of the various groups on Blood Hemoglobin and the results are presented in table-02.

Table 3:- Paired Mean Difference of Bhutia, Mech, Rabha and Toto tribal inhabitants of Dooars in North Bengal on Hemoglobin in gm/100 ml.

Bhutia	Mech	Rabha	Toto	Mean Difference	Critical Difference
9.55	**9.56**			**0.01**	
9.55		**11.57**		**-2.01***	
9.55			**11.85**	**-2.30***	**0.65**
	9.56	**11.57**		**-2.01***	
	9.56		**11.85**	**-2.29***	
		11.57	**11.85**	**0.28**	

*The mean difference is significant at 0.05 level

The Table 03 shows the LSD, post hoc test between Bhutia, Mech, Rabha and Toto tribes for Physiological variables (Blood Hemoglobin) where the significant difference is mentioned as follows:

Blood Hemoglobin was found significant between Bhutia and Rabha with mean difference 2.01, Bhutia and Toto with mean difference 2.30, Mech and Rabha with mean difference 2.01, Mech and Toto with mean difference 2.29,

against the required critical difference of 0.65 at 0.05 level of confidence, whereas Toto was found insignificant with Rabha.

Discussion:-

Statistically Blood Hemoglobin was found significant in Toto - Bhutia and Toto - Mech tribe; it may be to due to residing at sub Himalayan area of both the tribes, adaptation of daily strenuous activity load for whole day and regular intake of some natural sub Himalayan variety of vegetables. The result of Blood hemoglobin was found statistically significant between Rabha- Bhutia and Rabha – Mech. The probable reason may be due to high intensity of work nature in their daily life. Shaver (1981) has mentioned in his book (Essentials of Exercise Physiology) that as we ascend to high altitudes there decrease partial pressure of oxygen and a relative anoxia. Subsequently acclimatization occurs and anoxia disappears.

Conclusion:-

On the basis of the result drawn with the mentioned methodology the following conclusions were soughed out:- The significant result has been found in blood hemoglobin between Bhutia & Rabha, Bhutia & Toto, Rabha & Mech and Mech & Toto. The conclusion of this research work may also aware the tribal individuals while performing or training any sports activity.

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