

Normal Values in the Adult Zambian

VI. TRANSFERRIN

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SUMMARY

A study of the concentration of transferrin in the normal Zambian adult is presented. There is no

difference demonstrated between males and females but the time allowed for diffusion is important and values are given for the periods: 4 hours, 16 hours and 48 hours.

INTRODUCTION

Transferrin (Siderophilin) is a β -globulin whose function is to transport iron in the plasma from the alimentary tract to the tissue stores and other organs of the body. Each molecule of transferrin binds two atoms of ferric iron.

It is the purpose of this paper to present a study of its concentration in the serum.

MATERIAL AND METHOD

A set of aliquots stored at -30°C from a previously described group of normal Zambians (Kibukamusoke & Snook, 1975) was allowed to thaw and used for the study.

Using the radial immunodiffusion method with standard reference sera and specific immunoplates from Hyland Laboratories estimations were made for the periods: 4 hours, 16 hours and 48 hours. The results were computed for confidence limits using Student's T test.

RESULTS

The results on total concentration are given in Table I.

DISCUSSION

There is a significant difference between the mean values at each of the observation periods. Thus the 16 hour value is significantly greater than the 4 hour one. Similarly the 48 hour one is greater than the 16 hour value. Since there is a significant diffusion-time relationship in the period of observation it is important to quote the period allowed for diffusion in giving results by this method. Furthermore, the normal figures for the period must be available for interpretation. This report gives these figures and the ranges for each of the periods.

The figures obtained for the 16 and 48 hour periods (see table 1) are more like those obtained by other methods: 240–280mg/100 ml (Wintrobe 1958, Hoffrand et al, 1972). Jager (1949) gives similar figures: 270mg/100 ml. These periods may therefore be more advisable in order to permit comparison both with figures that are already available and those which are yet to come. Wintrobe (1958) says that figures of 300–360 $\mu\text{g}/100\text{ ml}$ of total iron binding capacity (TIBC) correspond to transferrin concentrations of 0.24 to 0.28 gm/100ml. Rath et al (1949), Laurell (1947) and Cartwright et al (1949) give similar figures for T.I.B.C.

TABLE I

Total Concentrations of Transferrin in Males and Females.

	Males			Females		
	4 Hours	16 Hours	48 Hours	4 Hours	16 Hours	48 Hours
Mean (mg/100ml)	208.50	251.97	306.2	231.86	294.71	328.05
S.D.	48.36	51.81	78.00	59.90	58.13	52.17
S.E.M.	8.83	9.46	14.24	13.07	12.69	11.39
+ value (Male Vs Female)	1.46	2.62	1.08			
P value (Male Vs Female)	0.10	0.025	0.15			
Range (mg/100ml)	112–305	148–355	150–462	112–352	178–410	224–432

The main difference in Table I is between the values for each observation period. This is further analysed in Table II.

There is no significant difference demonstrated between males and females and an extraction of figures from those on the "pill" fails to reveal any.

TABLE II

Relationship between concentration and diffusion time

	MALES			FEMALES		
	4 Hours	16 Hours	48 Hours	4 Hours	16 Hours	48 Hours
Mean (mg/100ml)	208	252	306	232	295	328
Range (mg/100ml)	112–305	148–355	150–462	112–352	178–410	224–432
t value	3.36 (4 hrs Vs 16 hrs)	3.17 (16 hrs Vs 48 hrs)	3.45 (4 hrs Vs 16hrs)		1.96 (16 hrs Vs 48 hrs)	
P value	> 0.0025	> 0.0025	> 0.0025		0.05 < P > 0.025	

Values for Each Period are significantly different from each other.

further differences.

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