The Anti – LH Lectin – Leucocyte Reactions in Patients with Diabetes Mellitus: Further Observations

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Citation

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Abstract

Leucocyte samples from 109 confirmed cases of diabetes mellitus were tested with the anti-LH lectin, Erythrina lithosperma and compared with adequate controls. The results indicate strong agglutination of leucocytes of both diabetic and control samples with the anti-LH lectin; however, it fails to differentiate diabetic leucocytes from normal ones on the basis of the intensity of their reactions.

INTRODUCTION

Human leucocytes possess A and B antigens [1,2,3,4,5]. By absorption and elusion tests and also by mixed cell agglutination test, the agglutination results have been confirmed. According to Dausset [6], the A and B antigens are intrinsic in leucocytes and not merely absorbed from the plasma. Lectin – leucocyte interactions have been studied by Sharon [7], Sehrt and Luther [8], Culina et al [9] and Carlin et al [10].

The anti-LH lectin (Erythrina lithosperma extract) was successfully used to discriminate human red blood cells as LH-positive (firm agglutination) and LH-negitive (weak agglutination) types, initially by Shrivastava et al[11]. Recently, this lectin was used to differentiate diabetic red blood cells from those of normal individuals [12,13]. Following the earlier report [14], in the present study, an attempt has been made, considering larger sample size, to observe the reaction patterns of the anti-LH lectin and leucocytes in patients with diabetes mellitus.

MATERIALS AND METHODS

A total of 109 blood samples from patients with diabetes mellitus (type II) were obtained from District Hospital, Sagar, and Varny Pathology Clinic, Sagar, Madhya Pradesh. Control samples were obtained from 98 unrelated normal healthy individuals from the same area. The samples comprised both males and females.

For the ABO typing, standard serological procedures were followed. The anti-LH lectin (Erythrina lithosperma extract) was prepared in the laboratory as described by Shrivastava et al [11]. The seeds of Erythrina lithosperma were procured from the Botanical Survey of India, Kolkata.

The separation of leucocytes was done following Widmann [15], with minor modifications. For leucocyte agglutination tests, 25 µl leucocyte suspensions and an equal amount of anti-LH lectin were mixed in a cavity of a tile. Saline control was also made for comparison. After 20 minutes, readings were recorded both macroscopically and microscopically. Thereafter, titration tests were performed and results were recorded after 30 minutes.

RESULTS

Table 1 shows the anti-LH lectin –leucocyte reactions in diabetic and control samples at different titres. The lectin Erythrina lithosperma reacted at titre 1:16 with the leucocytes of diabetic A cells (06.42%), B cells (19.27%), O cells (01.83%) and AB cells (02.75%) and with control leucocytes of A cells (07.14%), B cells (13.26%), O cells (04.08%) and AB cells (05.10%). The lectin reacted at titre 1:32 with the leucocytes of diabetic A cells (13.76%), B cells (22.94%), O cells (28.44%) and AB cells (04.59%) and with control leucocytes of A cells (13.26%), B cells (22.45%), O cells (32.65%) and AB cells (02.04).

The distribution of titre scores in patients with diabetes mellitus and controls pooling all the four blood groups is given in table 2. The lectin reacted at titre 1:16 slightly more with diabetic cells (30.27% and) than controls (29.59%) and at titre 1:32 slightly less (69.72%) than controls (70.41%), showing no significant differences (P> 0.05) statistically between the diabetic and control samples.

Figure 1

Table 1: The anti-LH lectin – leucocyte reactions and titre scores in patients with diabetes mellitus.

Populations	N	Titres in A group individuals		Titres in B group individuals		Titres in O group individuals		Titres in AB group individuals	
		1:16	1:32	1:16	1:32	1:16	1:32	1:16	1:32
Patients	109	07	15	21	25	02	31	03	05
		(6.42%)	(13.76%)	(19.27%)	(22.94%)	(1.83%)	(28.44%)	(2.75%)	(4.59%)
Controls	98	07	13	13	22	04	32	05	02
		(7.14%)	(13.26%)	(13.26%)	(22.45%)	($.08%)	(32.65%)	(5.10%)	(2.04%)

Figure 2

Table 2: Distribution of titre-scores (pooled for all the four blood groups) in patients and controls.

Populations	Titre 1:16		Titre 1:32		X^2	P
	No Obs	%age	No Obs	%age		
Patients	33	30.27	76	69.72	0.012	NS
Controls	29	29.59	69	70.41		

DISCUSSION

The results indicateed that the lectin Erythrina lithosperma reacted with the leucocytes from both diabetic as well as normal individuals in almost equal strength. However, unlike erythrocytes where clear cut differentiation regarding the reaction patterns (LH-negative for weak reaction and LH-positive for strong reaction) occurs in diabetic and control samples [12,13], the anti-LH lectin Erythrina lithosperma fails to differentiate diabetic leucocytes from normal ones on the basis of the intensity of their agglutination. Nonetheless, it follows the findings of the earlier study [14]. It appears therefore that the variable expression of the LH antigen is a unique property only of erythrocytes.

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