RESULTS

Results

The results of our study are listed in the following tables:

Table (10): The values of blood glucose level, Hb A_1c, βG enzyme in the serum and milk of diabetic mothers. βG enzyme indiriect bilirubin in the serum and birth weight of IDMs.

No.	Maternal blood glucose (mg/dl)	HbA1c (%)	βG in the serum of diabetic mothers (sigma units/ml)	βG in the milk of diabetic mothers (sigma units/ml)	βG in the serum of IDMs	Indirect bilirubin in the serum of IDM (mg/dl)	BW of IDMs (gram)
1	145	9.8	87.5	519	36	11.3	3.60
2	125	7.2	62.0	498	27	7.9	3.75
3	165	10.2	94.0	576	36	11.2	4.01
4	145	9.7	83	503	32	10.3	3.50
5	130	8.6	98	599	38	11.5	4.06
6	160	8.6	106	713	44	13.1	3.90
7	120	6.7	82	615	41	11.7	3.43
8	125	7.2	73	578	38	8.4	3.09
9	145	7.7	91	631	42	12.3	4.28
10	160	6.5	46	411	26	8.5	4.05
11	123	12.1	109	588	36	10.8	3.45
12	160	11.5	102	611	40	11.6	3.80
13	145	8.5	51	602	40	11.5	2.89
14	185	9.7	88	498	32	9.9	3.68
15	170	10.2	73	481	30	7.1	3.70
16	140	10.8	131	749	48	14.3	3.90
17	120	6.9	68	410	24	8.3	2.98
18	136	6.9	65	402	30	4.3	3.25
19	186	8.7	71	511	34	10.4	3.40
20	134	9.3	118	723	47	13.7	4.54
21	180	10.9	127	717	44	13.6	3.50
22	180	11.3	112	678	42	12.7	2.90
23	145	7.9	86	516	34	1 0.4	2.83
24	125	6.9	57.2	396	28	8.5	3.50
25	146	9.8	86.2	491	32	9.6	3 .67
26	149	10.3	88.2	539.5	36	10.7	2.24
27	195	10.6	73.2	471.2	31	9.2	3.40
28	165	7.6	71.0	398.0	24	5.8	3.60
29	137	9.9	91.7	456.6	26	4.3	2.38
30	123	8.6	77.3	441.5	31	9.9	2.98

Table (11): Values of βG enzyme in the serum and milk of non-diabetic mothers. βG enzyme, indirect bilirubin in the serum and birth weight of infants of non diabetic mothers.

No	βG in the serum of non-diabetic mothers (sigma units/ml)	βG in the milk of non-diabetic mothers (sigma units/ml)	βG in the serum of infants non-diabetic mothers	Indirect serum bilirubin in infants of non-diabetic mothers (mg/dl)	BW of infants of non-diabetic mothers (gram)
1	42.0	221	33	4.4	3.40
2	56.0	249	41	8.3	3.17
3	39.1	169	25	1.8	2.90
4	29.0	151	26	1.7	3.25
5	23.5	148	19	0.6	3.58
6	29.2	210	33	3.3	3.01
7	52.3	239	37	5.7	2.80
8	46.6	194	31	2.9	3.50
9	38.3	191	21	2.6	2.66
10	66.6	214	33	4.5	3.28

Table (12): Serum level of βG in diabetic mothers in comparison with that of non-diabetic mothers.

Group / βG (sigma units/ml)	Diabetic mothers (30)	Non-diabetic mothers(10)
Range	46-131	23.5-66.6
Mean	85.61	42.32
± SD	±21.09	±13.37
t	6.065	
P	≤0.001*	

*= significant

Table (13): Milk level of βG in diabetic mothers in comparison with that of non-diabetic mothers.

Group / βG (sigma units/ml)	Diabetic mothers (30)	Non-diabetic mothers(10)
Range	396-749	148-249
Mean	543.8	198.6
± SD	±104.27	±34.67
t	10.205	
P	≤0.001*	

Table (14): Serum level of βG in diabetic mothers in comparison with that of their infants.

Group / βG (sigma units/ml)	Diabetic mothers (30)	IDMs (30)
Range	46-131	24-48
Mean	85.61	34.97
± SD	±21.09	±6.718
t	12.527	
P	≤0.001*	

***= significant**

Table (15): Serum level of βG in non-diabetic mothers in comparison with that of their infants.

Group / βG (sigma units/ml)	Non-diabetic mothers (10)	Infants of non-diabetic mothers(10)
Range	23.5-66.6	19-41
Mean	42.32	29.9
± SD	±13.37	±6.999
t	2.602	
P	≤0.01*	

Table (16): Serum level of βG in infants of diabetic mothers in comparison with that of infants of non-diabetic mothers.

Group / βG (sigma unts/ml)	IDMs (30)	Infants of non-diabetic mothers (10)
Range	24-48	19-41
Mean	34.97	29.9
±SD	±21.09	±6.999
t	2.045	
P	≤ 0.005*	

*** = significant.**

Table (17): Serum level of indirect bilirubin in infants of diabetic mothers in comparison with that of infants of non-diabetic mothers.

Group / serum indirect bilirubin mg/dl	IDMs (30)	Infants of non-diabetic mothers (10)
Range	4.3-14.3	0.6-8.3
Mean	10.327	3.58
±SD	±2.306	±2.245
t	8.063	
P	≤ 0.001*	

Table (18): Birth weight of infants of diabetic mothers in comparison with that of infants of non-diabetic mothers.

Group / Birth weight gram	IDMs (30)	Infants of non-diabetic mothers (10)
Range	2.24-4.54	2.66-3.58
Mean	3.475	3.155
±SD	±0.529	±0.306
t	1.822	
P	> 0.05**	

***= significant**

****= not significant.**

TABLES OF CORRELATIONS

Table (19): Correlation between βG enzyme in the serum and milk of diabetic mothers (DMs)

	Mean±SD	r	P
βG in the serum of DMs	85.61±21.09	+0.7899	≤ 0.001*
βG in the milk of DMs	543.80±104.27		

Table (20): Correlation between glycosylated hemoglobin (**HbA_1c**), blood glucose level in DMs, indirect serum bilirubin of IDM and **B**G in the serum and milk of DMs and **B**G in the serum of their infants.

Variable	**HbA_1c**		blood glucose level		Indirect serum bilirubin	
	Mean ± SD 9.007±1.602		Mean ± SD 149.47±21.88		Mean ± SD 10.327±2.306	
	r	p	r	p	r	p
βG in the serum of DMs Mean ± SD (85.61±21.09)	0.677	≤0.001*	0.122	>0.05**	0.652	≤0.001*
βG in the milk of DMs Mean ± SD (543.80±104.27)	0.439	≤0.05*	0.087	>0.05**	0.849	≤0.001*
βG in the serum of IDMs Mean ± SD (34.97 ±6.718)	0.383	≤0.05*	0.061	>0.05**	0.864	≤0.001*

***= Significant**
****= not significant**

Table (21): Correlation between βG in the serum and milk of DMs and βG in the serum of their infants.

	βG in the serum of IDMs	
	Mean ± SD (34.97 ± 6.718)	
	r	p
βG in the serum of DMs Mean ± SD (85.16 ± 21.09)	0.726	≤0.001*
βG in the milk of DMs Mean ± SD (543.80 ± 104.27)	0.958	≤0.001*

Table (22): Correlation between indirect bilirubin in the serum of IDMs and blood glucose and HbA_{1c} of their diabetic mothers.

	Serum indirect bilirubin in IDMs	
	Mean ± SD (10.327 ± 2.306)	
	r	p
Blood glucose level Mean ± SD (149.47 ± 21.88)	0.125	> 0.05**
HbA_{1c} Mean ± SD (9.007 ±1.602)	0.392	≤ 0.05*

***= Significant**

****= not significant**

Table (23): Correlation between indirect bilirubin in the serum of infants of non diabetic mothers and βG in the serum and milk of non diabetic mothers and in the serum of their infants.

	Serum indirect bilirubin Mean ± SD (3.58 ± 2.245)	
	r	p
βG in the serum of non diabetic mothers Mean ± SD (42.32 ± 13.37)	0.734	≤ 0.001*
βG in the milk of non diabetic mothers Mean ± SD (198.6 ± 34.67)	0.937	≤ 0.001*
βG in the serum of infants of non diabetic mothers Mean ± SD (29.9 ± 6.999)	0.908	≤ 0.001*

Table (24): Correlation between B.W of infants of non diabetic mothers and their serum indirect bilirubin.

	Serum indirect bilirubin of infants of non diabetic mothers Mean ± SD (3.58 ± 2.245)	
	r	p
BW of infants of non diabetic mothers Mean ± SD (3.155 ± 0.306)	0.173	> 0.05**

* = significant

**= not siginficant

Table (25): Correlation between βG in the serum and milk of non diabetic mothers and βG in the serum of their infants.

	βG in the serum of infants of non diabetic mothers	
	Mean ± SD (29.9 ± 6.999)	
	r	p
βG in the serum of non diabetic mothers Mean ± SD (42.32 ± 13.37)	0.673	≤ 0.001*
βG in the milk of non diabetic mothers Mean ± SD (198.6 ± 34.67)	0.889	≤ 0.001*

Table (26): Correlation between birth weight βG of IDMs and their serum indirect bilirubin.

	Serum indirect bilirubin of infants of IDM	
	Mean ± SD (10.327 ± 2.306)	
	r	p
BW of IDMs Mean ± SD (3.475 ± 0.524)	0.359	> 0.05**

*= significant

**= not significant

Fig. (6):

Serum and milk Beta_Glucuronidase
in diabetic and non diabetic mothers

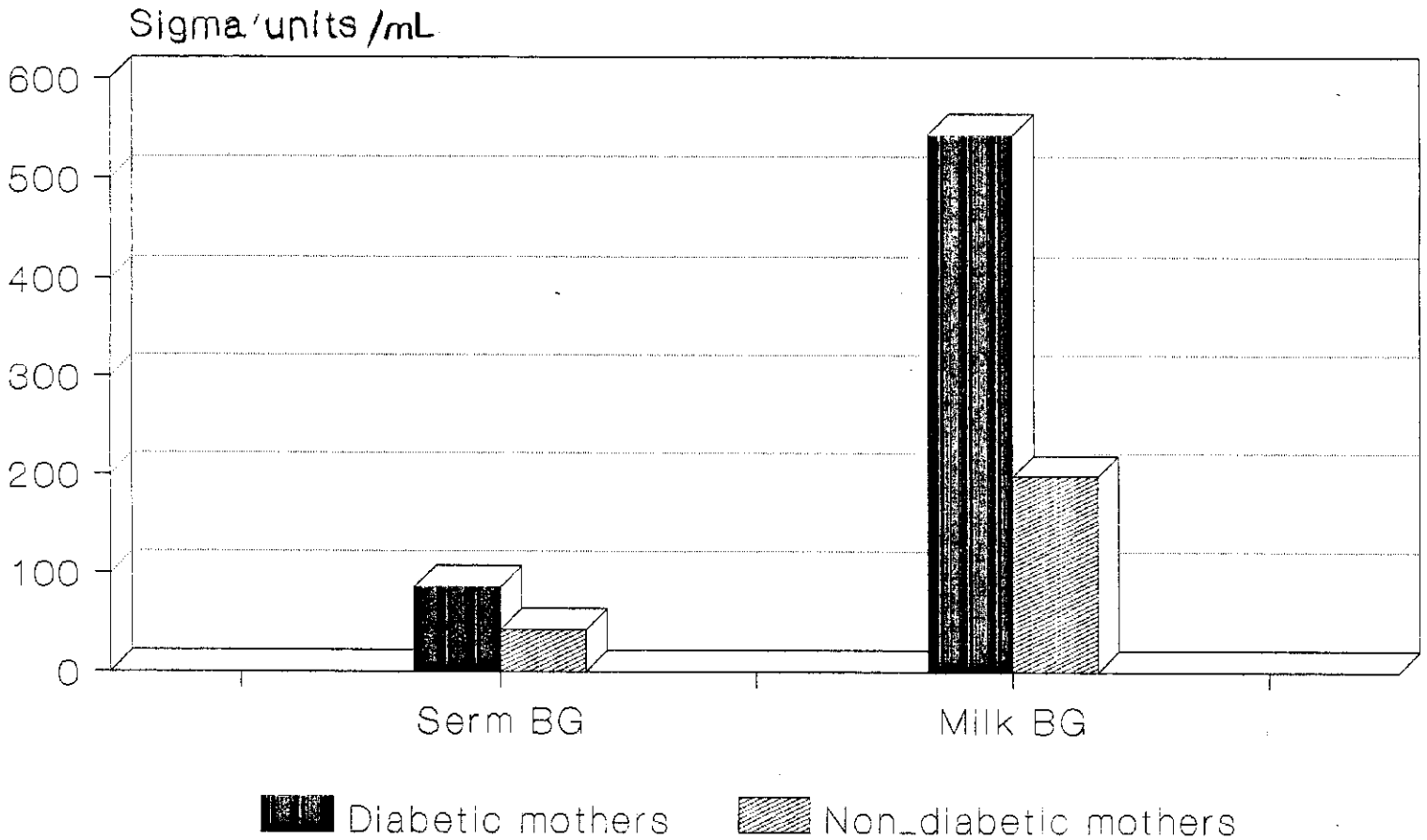
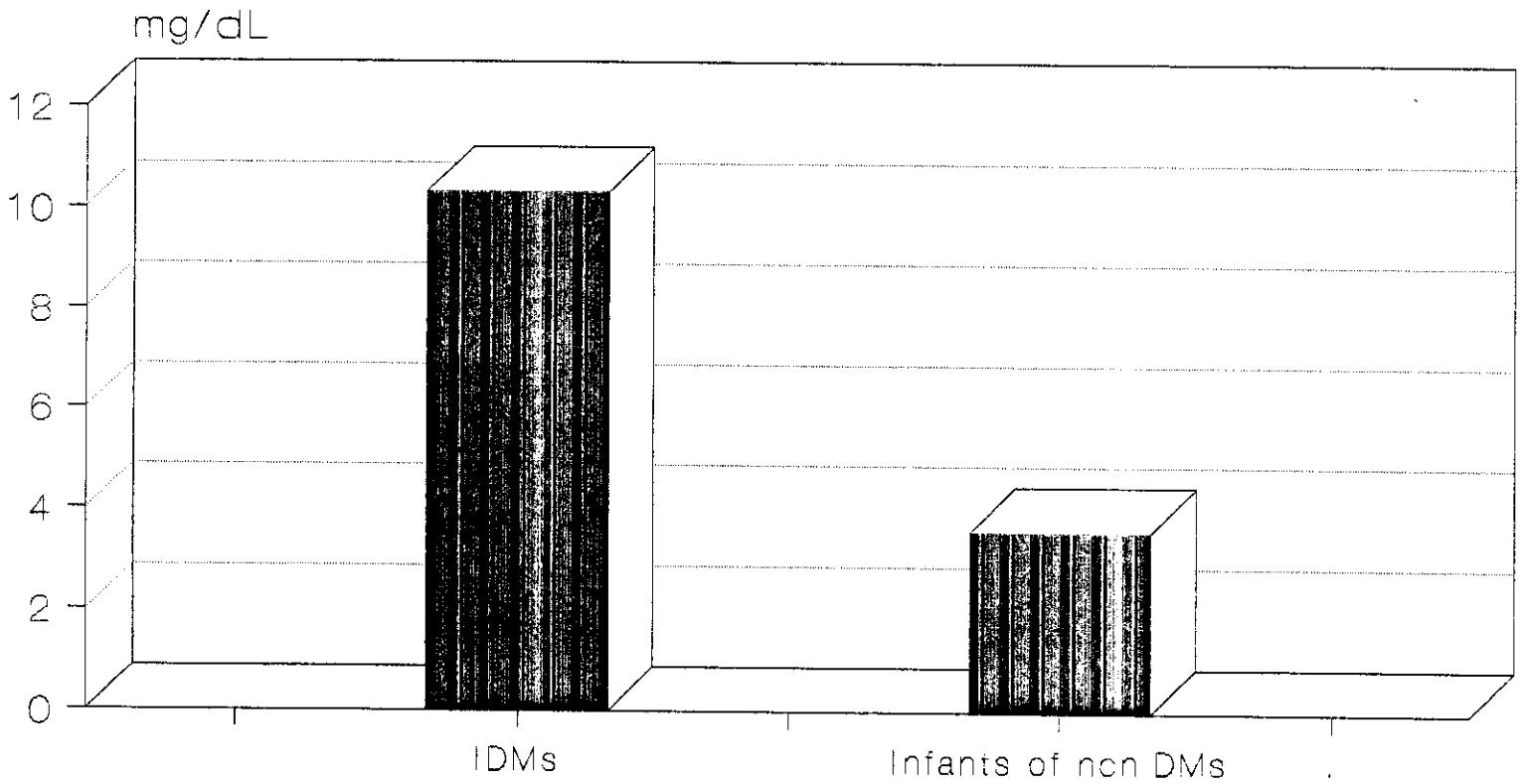


Fig. (٦):

Serum indirect bilirubin in infants of diabetic and non diabetic mothers



STATISTICAL ANALYSIS OF DATA

Statistical analysis of the results was carried out according to the following formulae [Fisher 1946]

1- Mean value ($\bar{x}$):-

The mean sum of all observations (x) divided by the number of observations (n):-

$$\bar{X} = \frac{x}{n}$$

2- Standard deviation :- (S.D.)

was calculated according to following formula

$$S.D. = \sqrt{\frac{(X - \bar{X}^2)}{n-1}}$$

Where $(X - \bar{X}^2)$ is the sum of squares of the difference between each observation (X) and the mean value of all observation (X)

3- To test for the significance of difference between two means the following formula. Was used.

$$T = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{(S.D)_1^2}{n^1} + \frac{(S.D)_2^2}{n^2}}}$$

Where

X_1 = Mean value in sample 1

X_2 = Mean value in sample 2

n_1 = Number of cases in sample 1

n_2 = Number of cases in sample 2

$S.D_1$= Standard deviation in sample 1

$S.D_2$= Standard deviation in sample 2

The probability (p) for this calculation of value of "t" with degree of freedom =(n1=n2)-2 was obtained from statistical tables the level significance accepted for ($P < 0.05$)

ANALYSIS OF THE RESULTS

The results of this work were illustrated in the following tables:

Table (10) Showed the values of blood glucose level, HbA_1c, βG enzyme in the serum and milk of diabetic mothers. βG enzyme, indirect bilirubin in the serum and birth weight of IDMs.

Table (11) Showed the values of βG enzyme in the serum and milk of non-diabetic mothers. βG enzyme, indirect bilirubin in the serum and birth weight of infants of non-diabetic mothers.

Table (12) Showed that, the mean level of βG enzyme in the serum of diabetic mothers **(85.61 ± 21.09 sigma units/ml)** was significantly higher as compared to its level in the serum of non-diabetic mothers **(42.32 ± 13.37 sigma units/ml)** $P \leq 0.001$.

Table (13) Showed that the mean level of βG enzyme in the milk of diabetic mothers **(543.8 ± 104.27 sigma units/ml)** was significantly higher as compared to its level in the milk of non-diabetic mothers **(198.6 ± 34.67 sigma units/ml)** $P \leq 0.001$.

Table (14) Showed that the mean level of βG enzyme in the serum of diabetic mothers **(85.61 ± 21.09 sigma units/ml)** was significantly higher as compared to its level in the serum of their infants **(34.97 ± 6.718 sigma units/ml)** $P \leq 0.001$.

Table (15) Showed that the mean level of βG in the serum of non-diabetic mothers **(42.32 ± 13.37 sigma units/ml)** was significantly higher than in the serum of their infants **(29.9 ± 6.999 sigma units/ml)** $P \leq 0.001$.

Table (16) Showed that the mean level of βG enzyme in the serum of IDMs **(34.97 ± 21.09 sigma units/ml)** was significantly higher as

compared to its level in the serum of infants non-diabetic mothers (**29.9 ± 6.999 sigma units/ml)** P≤.0.005.

Table (17) Showed that the mean level of indirect bilirubin in the serum of IDMs **(10.327 ± 3.306 mg/dl)** was significantly higher than its level in the serum of infants of non-diabetic mothers **(3.58 ± 2.245 mg/dl)** P≤0.001.

Table (18) Showed that no significant differences between the birth weight of IDMs **(3.475 ± 0.524 gram)** and the birth weight of infants of non-diabetic mothers **(3.155± 0.306 gram)** P >0.05.

TABLES OF CORRELATIONS

Table (19) Showed a significant correlation between β-glucuronidase enzyme in the serum of diabetic mothers and that in their breast-milk (P≤ 0.001).

Table (20) Showed the following correlations:

- Asignificant correlation was present between β-glucuronidase enzyme in the serum of diabetic mothers and HbA_1c in their blood (P≤ 0.001) and indirect bilirubin in the serum of their infants (P≤ 0.001).
- Asignificant correlation was found between β-glucuronidase enzyme in the milk of diabetic mothers and HbA_1c in their blood (P≤ 0.05) and indirect bilirubin in the serum of their infants (P≤ 0.001).
- Asignificant correlation was found between β-glucuronidase enzyme in the serum of infants of diabetic mothers and indirect bilirubin in their serum (P≤ 0.001) and HbA_1c in the blood of their mothers (P≤ 0.05) .
- No significant correlation was found between β-glucuronidase enzyme in the serum, milk of diabetic mothers serum of their infants and blood glucose level of diabetic mothers (P > 0.05).

Table (21) Showed a significant correlation between β-glucuronidase enzyme level in the serum, milk of diabetic mothers and its level in the serum of their infants ($P \leq 0.001$).

Table (22) Showed a significant correlation between HbA_1c in the blood of diabetic mothers and level of indirect bilirubin in the serum of their infants ($P \leq 0.05$). While there was no significant correlation between blood glucose level in the diabetic mothers and indirect bilirubin in the serum of their infants ($P \leq 0.05$).

Table (23) Showed a significants correlation between β-glucuronidase enzyme level in the serum, milk of non-diabetic mothers and indirect bilirubin in the serum of their infnts ($P > 0.001$).

There was also a significant correlation between β-glucuronidase level in the serum of infants of non-diabetic mothers and the level of indirect bilirubin in their serum ($P \leq 0.001$).

Table (25) Showed a significant correlation between β-glucuronidase level in the serum, milk of non-diabetic mothers and its level in the serum their infants ($P \leq 0.001$).

No significant correlation was found between birth weight of both infants of diabetic and non-diabetic mothers and serum indirect bilirubin of both ($P > 0.05$) table **(26)** and **(24)**.