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Hyperglycemia

(31) (62) Nitrobluetetrazolium (70-5) (31)
(20-1)

(160 mg/dl) (200mg/dl)
(160 mg/dl) (200mg/dl)

Estimation of Phagocytic Activity in Diabetic Patients (Type 1 , 2) in Mosul City

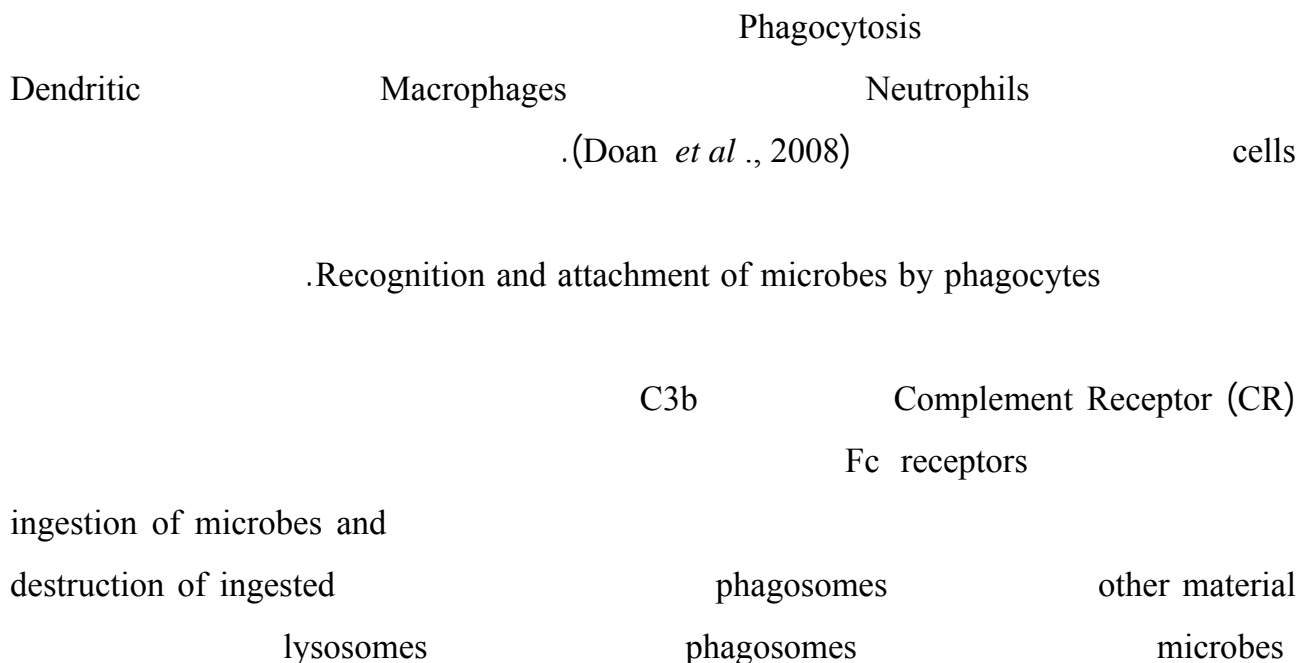
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ABSTRACT

Hyperglycemic diabetic have a deficit in their non-specific defense. The present study investigated phagocytosis of Nitrobluetetrazolium in 62 diabetic patients with age between (5-70) years, and with variable disease period (1-20) years of both sex; (31) of them are IDDM, other are NIDDM. All patients were divided in two groups depending their glucose level (more 200mg/dl) and (less than 160mg/dl) and were compared with control. The results indicated a significant reduction in phagocytic activity in all diabetic patients, moreover a significant reduction ($p \leq 0.05$) in phagocytic activity in both IDDM, NIDDM. On the other hand a significant reduction in phagocytic activity in the two groups of IDDM, NIDDM (glucose level more than 200mg/dl) and (160mg/dl) when compared with control. The study suggests that all diabetics have a significant reduction in their phagocytic activity, and this reduction is not related to the type of disease, age, sex, but depending on the glucose level in blood.

Keywords: Phagocytosis, Diabetes mellitus, Type I and Type II.



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phagolysosome

cathepsin

.(Doan *et al.*, 2008) phagolysosomes

lysozyme

.(Gene, 2009)

lactoferrin

.(Dziatkowiak *et al.*, 1982)

Cutler

hyperglycemia

polymorphonuclear leucocytes

(1991)

IDDM

(PMN)

superoxide

Porphyromonas gingivalis

superoxide

.(Cutler *et al.* , 1991) *Porphyromonas gingivalis*

.(Jakelic *et al.*,1995) well controlled diabetic patients ()

PMNs

HbA1c

Gin

.(BalasoIU *et al.*, 1997)

(36)

.normoglycemia

hyperglycemia

.(Gin *et al.* , 1984)

(62)

(31)

31)

(20-1)

(70-5)

(200mg/dl)

mg/dl)

(160 mg/dl)

(30)

(160 mg/dl) (200

-1

enzymatic colorimetric

gluconate .Randox Randox
 glucose-oxidase
 4-amino-antipyrine (H₂O₂)
 (15) (37)
 (505) apple optical density

-2

White Cells Count
 4/(4 sq mm) = 1mm³
 .(Lewis and Bain,2001) (200)X=

-3

Differential White Blood Cells Count
 (2-1.5)
 (100)

(8)
 .(Mckenzie,1996)

-4

(³ 0.1) Neutrophiles
 0.1% Nitroblue tetrazolium (NBT)
 (30) EDTA

.Lishman stain

100× :
 /NBT = %

(Simmons and Statland, 1997)

SPSS 18 :

.0.05 (T-test)T-

.....

($p \leq 0.05$)

(1)

(3) (2)

($p \leq 0.05$)

200 mg/dl)

(4) (160mg/dl

200 mg/dl)

(5) (160mg/dl

:1

	Subject	No. of patients	Mean cell/cm ³	± S.D.	Statistical analysis with p value	Sig .
Phagocytic cell	Diabetic patients	62	367	.21±36	$p \leq 0.05$	0.000(S)
	Control	30	1454	±543.1		

S: significant

:2

	Subject	No. of patients	Mean cell/cm ³	± S.D.	Statistical analysis with p value	Sig .
Phagocytic cell	IDDM	31	759	±359.7	$p \leq 0.05$	0.000(S)
	Control	30	1454	±543.1		

S: significant

:3

	Subject	No. of patients	Mean cell/cm ³	± S.D.	Statistical analysis with p value	Sig .
Phagocytic cell	IDDM	31	759	±359.7	p≤0.05	0.000(S)
	Control	30	1454	±543.1		

S: significant

:4

(High more than 200mg/dl) , (Low less than 160mg/dl)

	Subject	No. of patients	Mean cell/cm ³	± S.D.	Statistical analysis with p value	Sig .
Phagocytic cell	IDDM (High)	16	668	±262.9	p≤0.05	0.000(S)
	IDDM(Low)	15	856	±428.5		0.001(S)
	Control	30	1454	±543.1		

S: significant

:5

(High more than 200mg/dl),(Low less than 160mg/dl)

	Subject	No. of patients	Mean cell/cm ³	± S.D.	Statistical analysis with p value	Sig .
Phagocytic cell	NIDDM (High)	15	662	±309.7	p≤0.05	0.000(S)
	NIDDM(Low)	16	762	±418.3		0.000(S)
	Control	30	1454	±543.1		

S: significant

.(Nolan *et al.*, 1978)

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hyperglycemia

Ketoacidosis

.(Mowat and Baun, 1972)

1971 Weissmann

lysosomal enzyme activities

1974

Bagdade

phagocytosis

.(Bagdade *et al.*,1974)

ATP

phagocytosis

.hexose mono phosphate pathway glycolytic pathway

.(Davis *et al .*, 1971)

1993 Sato

()

(Hydrogen peroxide- H₂O₂) (Superoxide anions – O⁻²)

.(Sate *et al .*, 1993)

(Myeloperoxidase Mpo⁻ Cl⁻)

NBT

.(Delamaire *et al .*,1995)

2005 Nurun Nabi

NBT

Fc- receptor

C3b

Botelho *et)* pinocytic and phagocytic sites

(Fcγ-R)

.(*al.*, 2002

1997 Delamaire

Phagocytosis

hyperglycemia

bactericidal activity

chemotaxis

Chemiluminescence

CD11c CD11b

Free radical

Delamaire *et al.* ,)

.(1997

2001 Mc Manus

inflammatory mediators

PMNs

.(Komura *et al.*, 2010)

Polyol)

aldose reductase

(Pathway

nitric

sorbitol

glutathione oxide

.(Tebbs *et al.*, 1991)

.(Patti and Corvera , 2010)

Glycoproteins

adhesion molecules

(Mayadas and Cullere , 2005)

(Rosen, 2004)

down- regulation

inflammatory

processes

.(Anjos-Volotta *et al* ., 2006)

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