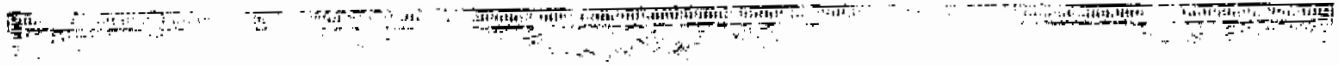

CELL ADHESION IN THE HEMOPOIETIC SYSTEM

Essay
Submitted in Partial Fulfillment for the Master Degree in Clinical & Chemical Pathology

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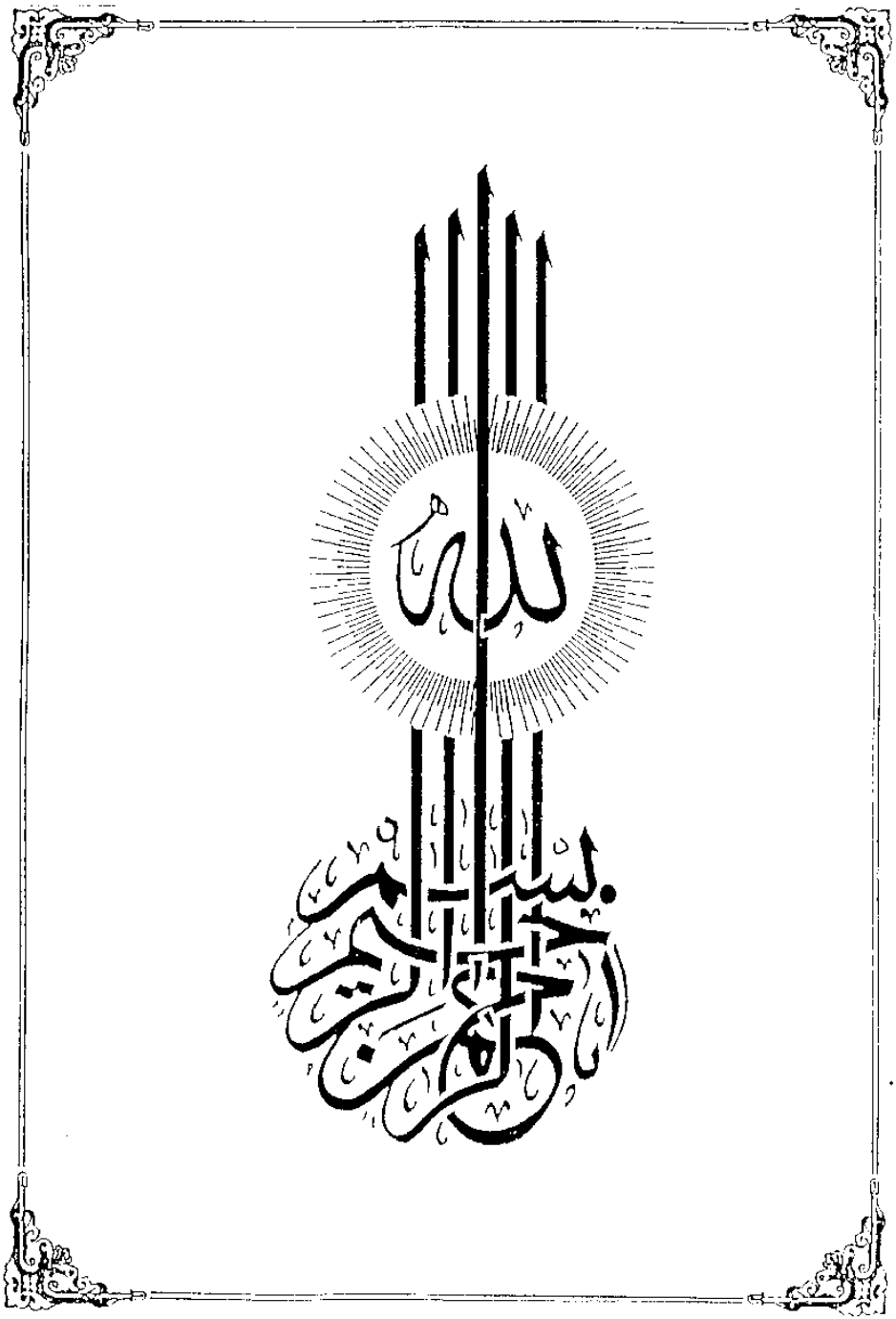

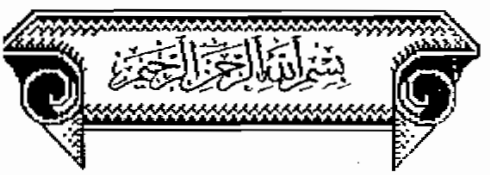

«قالوا سبحانك لا علم لنا
الا ما علمتنا انك انت
العليم الحكيم »

صدق الله العظيم

«سورة البقرة -آية ٣٢»

To My Father

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LIST OF ABBREVIATIONS

AC:	Accessory cell.
ALL:	Acute lymphocytic leukemia.
AML:	Acute myeloid leukemia.
BFUe:	Burst forming unit erythroid.
BM:	Bone marrow.
BSS:	Bernard soulier syndrome.
CAMP:	Cyclic adenosine monophosphate.
CD:	Cluster of differentiation.
CFC:	Colony forming cells.
CFU-GM:	Colony forming unit granulocyte, macrophage.
CML:	Chronic myeloid leukemia.
CNS:	Central nervous system.
CSF:	Cerebrospinal fluid.
DIC:	Disseminated intravascular coagulopathy.
ECM:	Extracellular matrix.
EGF:	Epithelial growth factor.
ELAM:	Endothelial leucocyte adhesion molecule.
FAB:	French-American British.
Fab:	Fragment antigen binding.
FCM:	Flow cytometry.
Fg:	Fibrinogen.
FIB:	Fibrinogen.
Fn:	Fibronectin.
GMP-140:	Granule membrane protein 140.
GP:	Glycoprotein.
GT:	Glanzmann's thrombasthenia.
Hb:	Hemoglobin.
HC:	Hairy cell.
HCL:	Hairy cell leukemia.
HEV:	High endothelial venule.
ICAM:	Intracellular adhesion molecule.
IFN:	Interferon.
Ig:	Immunoglobulin.
IL:	Interleukin.
KD:	Kilo dalton.
LAD:	Leucocyte adhesion deficiency.
LAM:	Leucocyte adhesion molecule.

LECAM:	Leucocyte endothelial cell adhesion molecule.
LFA:	Lymphocyte function associated antigen.
LHR:	Lymphocyte homing receptor.
LN:	Laminin.
LPAM:	Lymphocyte Peyer's patch adhesion molecule.
LPS:	Lipopolysaccharide.
LTBMC:	Long term bone marrow culture.
mAb:	Monoclonal antibody.
MAdcAM-1:	Mucosal adressin cell adhesion molecule-1.
MHC:	Major histocompatibility complex.
NK:	Natural killer.
NCAM:	Neural cell adhesion molecule.
P150/95:	Protein 150/95.
PADGEM:	Platelet activation dependent granule co external membrane.
PECAM:	Platelet and endothelial cell adhesion molecule.
PMA:	Phytohaemagglutinin.
PPME:	A yeast polysaccharide of mannose and mannose-6-phosphate.
RGD:	Arginine-glycine-aspartate.
SCHO:	Stable chineese hamster ovary.
T-PBL:	T-peripheral blood lymphocyte.
TCR:	T-cell receptor.
TGF-B:	Transforming growth factor B.
TNF:	Tumour necrosis factor.
TSP:	Thrombospondin.
VCAM:	Vascular cell adhesion molecule.
VLA:	Very late activation molecule.
VnR:	Vitronectin receptor.
vWF:	von Willibrand factor.

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INTRODUCTION

The term adhesion molecules refers to those cell surface structures that directly play a decisive mechanical role, the binding of a cell to its environment , either to the extracellular matrix or to another cell. This cellular adhesion plays a central role in many biological processes such as morphogenesis, cell migration, and direct cell-cell cooperation. In addition the phenomenon has important clinical consequences involving for instance, vascular thrombosis, the inflammatory process, tumour metastasis, bacterial and parasite infections **(Edelman, 1985).**

At present there are many clusters of differentiation (CD) molecules on the surface of cells of the haemopoietic system, defined by monoclonal antibodies (mAbs). Structurally, these molecules often traverse the cell membrane and are linked to the cytoskeleton, so that the cell can use them to gain traction to another cell or to the extracellular matrix as its moves **(Roitt et al., 1993).**

Moreover the events of cellular adhesion are closely linked to the events of cellular signalling. The inhert coupling of adhesion to signalling is due to both cell stabilization by the adhesion molecules permitting other surface molecules to bind their ligands and transduction of powerful signals controlling cell activation/proliferation via adhesion molecules **(Denning et al., 1987).**

Cellular adhesion in man is mediated via multiple molecular pathways which involve specific intermolecular events. These pathways are made of multimolecular complexes, and each pathway may strongly influence the affinity of another **(Roitt et al., 1993).**

AIM OF THE WORK:

The aim of this work to prepare a review for the cellular adhesion pathways and their importance in hematological functions and diseases.