



# **Measurement of CD155 in Egyptian Adult Patients of acute Myeloid Leukemia and its Relation to Clinical Outcome**

Thesis

*Submitted for Partial Fulfillment of Master Degree In Internal Medicine*

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالَ

سُبْحَانَكَ لَا عِلْمَ لَنَا  
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ  
الْعَلِيمُ الْعَظِيمُ

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# List of Abbreviations

Abb.	Full term
AML.....	Acute myeloid leukemia
APL.....	Acute promyelocytic leukemia
ASXL1.....	Additional sex comb like
ATO.....	Arsenic trioxide
ATRA .....	All-trans-retinoic acid
BiTE.....	Bispecific T-cell engager
BM .....	Bone marrow
IFN- $\gamma$ .....	Interferon gamma
CAMs .....	Cell adhesion molecules
CBC.....	Complete blood picture
CBF.....	Core binding factor
CEBP $\alpha$ .....	CCAAT-enhancer restricting protein $\alpha$
CML .....	Chronic myeloid leukemia
CMML.....	Chronic myelomonocytic leukemia
CNS.....	Central or peripheral nervous system
CR1 .....	1 <sup>st</sup> Complete remission
CR2 .....	2 <sup>nd</sup> complete remission
DART.....	Dual-affinity retargeting
DDR .....	DNA damage reaction
DNAM-1.....	DNAX accessory molecule-1
DNMT3A .....	DNA methyltransferase
ECM.....	Extracellular matrix
ELISA .....	Enzyme linked immunosorbant assay
ESR.....	Erythrocyte sedimentation rate
ET .....	Essential thrombocytosis
EVI1.....	Ecotropic viral integration site 1
FISH .....	Fluorescence in situ hybridization
FLT3 .....	Fms-like tyrosine kinase 3
GFR.....	Growth factor receptors

## List of Abbreviations Cont..

Abb.	Full term
GO.....	Gemtuzumab ozogamicin
HDAC .....	Histone deacetylation
ICPIs.....	Immune checkpoint inhibitors
IDH .....	Isocitrate dehydrogenase
ITD.....	Internal Tandm Duplicate
ITT .....	Immunoglobulin tail tyrosine
KMT2A-PTD.....	Histone-lysine N methyltransferase 2A incomplete tandem copy
LDH .....	Lactate dehydrogenase
MFC .....	Multicolor flowcytometry
MM.....	Multiple myeloma
MPAL.....	Mixed phenotype acute leukemia
MRD.....	Minimal residual disease
NCRs.....	Natural Cytotoxicity Receptors
Nec3 .....	Nectin-3
NK cells .....	Natural killer cells
NKG2D .....	Natural Killer group 2D
NPM1.....	Nucleophosmin-1
NRAS .....	Neuroblastoma RAS
OD.....	Optical densit
PCs.....	Presenting cells
PDGF.....	Platelet-derived growth factor
PML-RAR $\alpha$ .....	Promyelocytic Leukemia/Retinoic Acid Receptor Alpha
PRV.....	Polycythemia rubra vera
PVR.....	Poliovirus receptor
RNS.....	Reactive nitrogen species
ROS.....	Reactive oxygen species
RT-qPCR.....	Real-time PCR

## List of Abbreviations Cont..

Abb.	Full term
RUNX1 .....	Runt-related translation factor
Shh.....	Sonic hedgehog
STP .....	Signal transduction pathway
TET2 .....	Ten-eleven translocation 2
Th1 .....	T-helper cells
TIGIT .....	T cell immunoreceptor with Ig and ITIM domains
TKD .....	Tyrosine kinase domain
TNF- $\alpha$ .....	tumor necrosis factor- $\alpha$
TP53.....	Tumor protein p53
WHO .....	World health organization
WT1 .....	Wilms Tumor 1
$\alpha$ -KG .....	$\alpha$ -ketoglutarate

## Abstract

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**Background:** CD155 is also called polio virus receptor ( PVR) and nectin-like protein 5 (necl-5) due to functioning as the receptor for poliovirus, it described initially as poliovirus binding site and related to blood cells as being extra neural site for polio virus, and harboring domain structures similar to nectins. CD155 recruits and trans-interacts with nectin to promote cell migration and enhance cell motility.

**Objective:** To measure the level of CD155 in newly diagnosed acute myeloid leukemia patients and post chemotherapy . And to find the correlation of CD155 with other prognostic factors in AML.

**Methods:** A Prospective cohort study that was conducted on 30 acute myeloid leukemia patients who were recruited from clinical hematology department at Ain Shams university hospital and 20 healthy control subjects matched age and sex.

All the patients were subjected to the following: Full history, clinical examination, routine laboratory investigations and measurement of serum CD155 level by ELISA

**Results:** The present study proved that the level of CD155 is increased postchemotherapy in patients with acute myeloid leukemia and related to poor outcome

**Conclusion:** Serum CD155 measurement is useful as prognostic marker in Acute myeloid leukemia and can be used as an indicator of survival in patients with acute myeloid leukemia.

**Keywords:** serum CD155, acute myeloid leukemia, clinical outcome

## INTRODUCTION

CD155 is also called polio virus receptor(PVR) and nectin-like protein 5 (necl-5) due to functioning as the receptor for poliovirus, it described initially as poliovirus binding site and related to blood cells as being extra neural site for polio virus, and harboring domain structures similar to nectins. CD155 recruits and trans-interacts with nectin to promote cell migration and enhance cell motility (*Mueller and Wimmer, 2003; Ikeda et al., 2004*).

CD155 has been implicated in migration, invasion, proliferation and apoptosis of human cancer cells, and DNA damage response caused by chemotherapeutic agents or reactive oxygen species has been shown to attribute to CD155 induction (*Ardolino et al., 2011*).

As many of chemo therapeutic agents induce DNA damage and induce releasing of free radicals which increase CD155 expression through DNA damage response (DDR) (*Nishiwada et al., 2015; Fionda et al., 2015*).

CD155 is overexpressed by some tumors as in melanoma, glioma, colorectal and pancreatic carcinoma (*Inozume et al., 2016*).

A knockout of CD155 will improve the prognosis and prolong the survival in acute myeloid leukemia as study done

on cell lines and mice, and they found that targeting of CD155 will represent a promising future therapeutic option in AML.

As CD155 has a role in increasing the growth of the tumor, in this study we asked whether CD155 has a prognostic factor in acute myeloid leukemia and the effect of chemotherapy on its regulation (*Nishiwada et al., 2015*).

## AIM OF THE WORK

To measure the level of CD155 in newly diagnosed acute myeloid leukemia patients and post chemotherapy. And to find the correlation of CD155 with other prognostic factors in AML.