

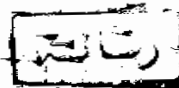
# THROMBOPOIETIN: PHYSIOLOGICAL AND BIOLOGICAL PROPERTIES

Essay

Submitted for partial fulfillment of  
master degree in CLINICAL and CHEMICAL  
PATHOLOGY

BY

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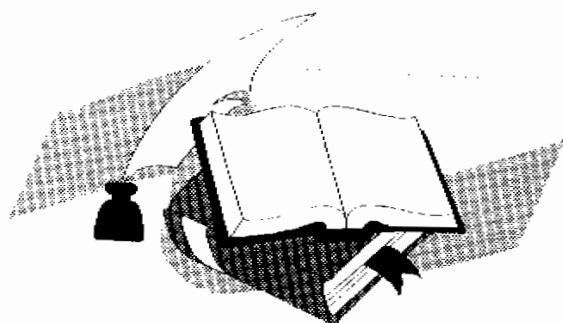
*First and foremost, I feel indebted to god the most kind and most merciful for helping and guiding me to the right path.*

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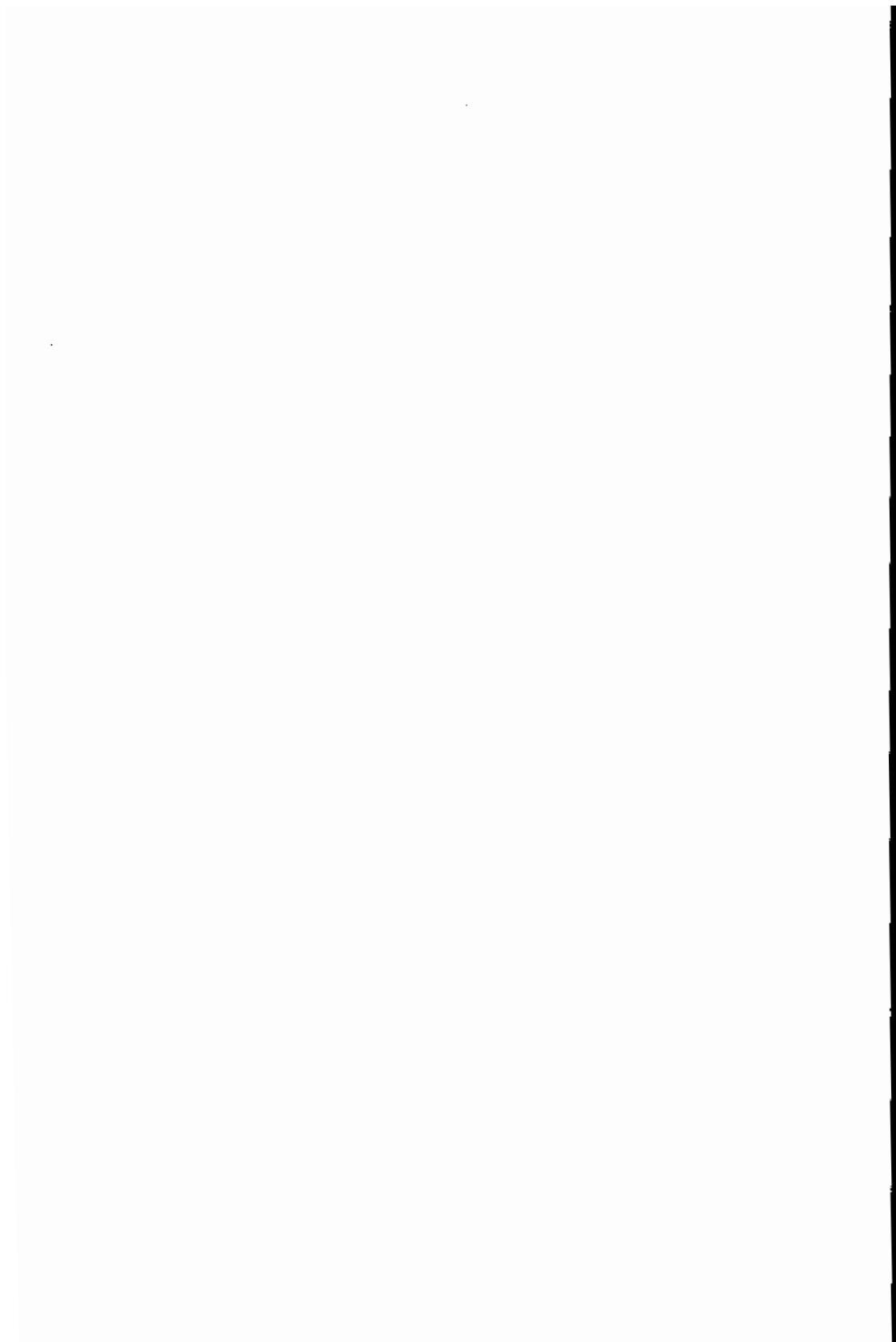


*To my Dears.....*

*Parents ....*

*Husband .....*

*Daughters.....*



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The first part of the paper discusses the importance of the research and the objectives of the study. It then presents a literature review of the existing research on the topic. The second part of the paper describes the methodology used in the study, including the data collection and analysis techniques. The third part of the paper presents the results of the study and discusses the implications of the findings. The final part of the paper concludes the study and provides recommendations for future research.

The research was conducted using a quantitative approach, with data collected from a survey of 100 participants. The data was analyzed using statistical software, and the results were presented in a series of tables and graphs. The findings of the study indicate that there is a significant relationship between the variables being studied, and that the results have important implications for the field.

The study was limited by a number of factors, including the sample size and the potential for bias. However, the results of the study are consistent with the findings of other research in the field, and the study provides valuable insights into the topic.

In conclusion, the study has shown that there is a significant relationship between the variables being studied, and that the results have important implications for the field. The study provides valuable insights into the topic, and the findings are consistent with the findings of other research in the field.

## *Abbreviations*

AA	Aplastic Anaemia
AchE	Acetyl choline - estrase.
ALL	Acute lymphoblastic leukaemia
AMM	Agnogenic myeloid metaplasia
ATP	Adenosin triphosphate
BFU-E	Burst forming unit erythrocyte
BM	Bone marrow
BPA	Burst promoting activity
BTG	Beta Thromboglobulin
CAMT	Congenital amegakaryocytic thrombocytopenia
CFU-GEMM	Colony forming unit granulocyte erythrocyte macrophage megakaryocyte
CFU-Meg	Colony forming unit - megakaryocyte
CMS	Colony megakaryocyte stem cell
CTAP	Connective tissue activating peptides
DMS	Demarcation membrane system
ELISA	Enzyme linked immunosorbant assay
EPO	Erythropoietin
ET	Essential Thrombocytosis
FACS	Fluorescence activated cell sorting
FBS	Fetal bovine serum
GPA	Glycophorin A
GP	Glycoprotein
HEL	Human erythroleukemia cell line
IMP	Integral membranous particle
IL	Interleukin
KD	Kilo dalton
LIF	Leukaemia inhibitory factor

MK	Megakaryocyte
Mega - CSA	Megakaryocyte colony stimulating activity
MGDF	Megakaryocyte growth and development factor
ML	Myeloproliferative ligand
MpL	Myeloproliferative leukaemia ligand
MPU	Mean platelet volume
PEG-rHu-MGDF	Pegylated recombinant human megakaryocyte growth and development factor
PF4	Platelet factor-4
PPF	Proplatelet formation
PVSG	Polycythemia vera specific group
RT	Reactive thrombocytosis
RT-PCR	Reverse transcriptase polymerase chain reaction
SCF	Stem cell factor
S-MpL	Soluble form of MpL
TPO	Thrombopoietin
vWF	von Willebrand factor

*Introduction and Aim of the work*

## **Aim of the work**

The aim of this review is to present available data for the physiological and biological properties of thrombopoietin, its measurement in blood, its involvement in the pathogenesis of thrombocytopenic and Thrombocythaemic disorders and its therapeutic uses.

## *Review of Literature*

Megakaryocyte progenitors have been shown to adhere to thrombospondin. Moreover, *MK* may adhere to marrow stromal fibroblasts expressing the membrane-bound form of kit ligand [*Stem cell factor (SCF)*]. The adhesive properties of *MK* may prove to be important in the delivery of platelet to the circulation (*Avraham, et al., 1992*).

***Cytoplasmic maturation :***

As polyploid progresses, cytoplasmic maturation occurs, but, do not appear to be inextricably linked. (*Herker, et al., 1969*). It can be defined to include the synthesis of protein and other biochemical constituents of platelets with attended cytoplasmic volume expansion, the synthesis and packing of specific organelles, and the production of the demarcation membrane system (*DMS*) which will ultimately constitute the membrane of the platelets. This system appears to be involved in delimiting areas believed to represent platelet territories (*Farnklin, et al., 1984, Williams, et al., 1982*)

As in other cells, the cell specific proteins are synthesized by ribosomes on the rough endoplasmic reticulum and then packaged via the golgi zone into granules (*Jones, 1960*). Megakaryocyte granules contain B-thromboglobulin , *Pf4*, thrombospondin, fibronectin, *vWF*, and P-selectin. In addition, the granules of *MK* and platelets have been shown to contains several plasma proteins, such as fibrinogen,