GLUTATHION S-TRANSFERASE M1 POLYMORPHISM IN ACUTE LYMPHOBLASTIC LEUKEMIA AND EVALUATION OF ITS RELATION TO PROGNOSIS

Thesis

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List of Abbreviations

ALL	Acute Lymphoblastic Leukemia
t	Translocation
HTLV-1	Human Thymic Leukemia Virus-1
DIC	Dissiminated Intravascular Coagulopathy
CBC	Complete Blood Picture
BM	Bone Marrow
LDH	Lactate Dehydrogenase
PT	Prothrombin Time
aPTT	Activated Partial Thromboplastin Time
CNS	Central Nervous System
CSF	Cerebrospinal Fluid
FAB	French-American-British
AML	Acute Myelogenous Leukemia
FCM	Flow Cytometry
IP	Immunophenotyping
CD	Cluster of Differentiation
WHO	World Health Organization
MRD	Minimal Residual Disease
PCR	Polymerase Chain Reaction
Ph	Philadelphia Chromosome
GST	Glutathione S-Transferase
TSO	Stillbene Oxide
CML	Chronic Myeloid Leukemia
CYP	Cytochrome p450
COPD	Chronic Obstructive Pulmonary Disease

NAT2	N acetyl Transeferase 2
CDNB	1-Chloro-2, 4-Dinitrobenzene
GSH	Reduced Glutathione
RIA	Radioimmunoassay
Ag	Antigen
Ab	Antibody
TR-IFMA	Time Resolved Immunoflurometric Assay
PBS	Phosphate Buffered Saline
dNTPs	Deoxynucleotides
DNA	Deoxyribonucleic Acid
Q-PCR	Quantitative Real Time Polymerase Chain Reaction
ds DNA	Double Stranded Deoxyribonucleic Acid
FRET	Förster (Fluorescence) Resonance Energy Transfer
RET	Resonance Energy Transfer
EET	Electronic Energy Transfer

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INTRODUCTION

Acute lymphoblastic leukemia (ALL) constitutes 75% of acute leukemias in children. About 2500-3000 children are diagnosed in the United States per year. The probable aetiology is not yet fully understood *(Zheng and Honglin, 2005; Redner, 2005)*.

Glutathion S-transferase (GST) M1, P1 and T1 are phase II enzymes that are involved in conjugation and detoxification of a wide range of xenobiotics including environmental carcinogens and chemo-therapeutic agents. GST polymorphisms have, thus, been considered as possible risk factor of acute lymphoblastic leukemia *(Zheng and Honglin, 2005)*.

Previous studies of childhood acute lymphoblastic leukemia (ALL) provided controversial data on the role of GST genotype in susceptibility and treatment outcomes *(Zheng and Honglin, 2005; Davies et al., 2008)*.

Zheng and Honglin, (2005) suggested that GSTM1 and GSTT1 but not GSTP1 polymorphisms, appear to be associated with an increase in the risk of acute lymphoblastic leukemia. Thus, it is conceivable that GSTM1 and/or GSTT1 null genotypes may play a role in leukemogenesis.