

**OXIDANT AND ANTIOXIDANT LEVELS  
IN PRETERM NEWBORN WITH  
IDIOPATHIC HYPERBILIRUBINAEMIA**

*Thesis*

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## LIST OF ABBREVIATIONS

AA	Ascorbic acid
ABO	Blood group ABO
ATP	Adenosine tri phosphate
BAER	Brain-stem audiometric evoked responses
BMI	Body mass index
BPD	Bronchopulmonary dysplasia
C.S.	Caesarean section
Ca	Calcium ion
CCL $\cdot$	Trichloromethyl radical
CH $\cdot$	Methylene group
CLD	Chronic lung disease
CPAP	Continuous positive airway pressure
CU-SOD	Copper superoxide dismutase
Cu-Zn SOD	Copper-Zinc super oxide dismutase
DNA	Deoxyribnucleic acid
DWMI	Diffuse white matter injury
FR	Free radical
FT-AGA	Fullterm appropriate for gestational age
FT-SGA	Fullterm small for gestational age
G $\cdot$ PD	Glucose $\cdot$ phosphate dehydrogenase
GMH-IVH	Germinal matrix intraventricular haemorrhage
GSH-PX	Glutathione peroxidases
GSSG	Oxidized glutathione
H $\cdot$ O $\cdot$	Hydrogen peroxide
Hb	Hemoglobin

HCT.....	Hematocrit
HMD.....	Hyaline membrane disease
HO.....	Heme oxygenase
IUGR.....	Intrauterine growth retardation
IVH.....	Intraventricular haemorrhage
LBW.....	Low birth weight
LO.....	Lipid alkoxyl radical
LOO.....	Lipid hydroperoxide radical
LPT.....	Large preterm
MDA.....	Malondialdehyde
MN-SOD.....	Manganese-superoxide dismutase
NBS.....	New ballard score
NEC.....	Necrotizing enterocolitis
NICU.....	Neonatal intensive care unit
NO.....	Nitric oxide
NVD.....	Normal vaginal delivery
O <sub>2</sub> .....	Molecular oxygen
O <sub>2</sub> <sup>-</sup> .....	Superoxide radical
O <sub>3</sub> .....	Ozone
PAF.....	Platelets activating factor
PDA.....	Patent ductus arteriosus
PGs.....	Prostaglandins
PIP.....	Peak inspiratory pressure
PPROM.....	Preterm premature rupture of membranes
PUFAs.....	Poly unsaturated fatty acids
PVL.....	Periventricular leukomalacia
RBCs.....	Red blood cells

RDS.....	Respiratory distress syndrome
RNS.....	Reactive nitrogen species
ROP.....	Retinopathy of prematurity
ROS.....	Reactive oxygen species
SOD.....	Superoxide dismutase
SPT.....	Small preterm
TNF.....	Tumour necrosis factor
TRAP.....	Total radical trapping capacity
TSB.....	Total serum bilirubin
UDPG-T.....	Uridine diphosphoglucuronyl transferase
VLBW.....	Very low birth weight
WBCs.....	White blood cells

INTRODUCTION  
AND  
AIM OF WORK

Hyperbilirubinemia is the most common clinical condition requiring evaluation and treatment in the newborn. It is clinically observed in 70% of term infants and 80% of premature infants (*Escobar et al., 2009*).

Although generally a benign transitional phenomenon, in a select few, the total serum bilirubin may rise to hazardous levels that pose a direct threat of brain damage. Acute bilirubin encephalopathy, is uncommon disorder, frequently evolving into kernicterus a devastating, chronic and disabling condition (*Watchko, 2007*).

An excess of free radicals are produced as in the case of newborn, part of it is directed against the circulating erythrocytes and may cause haemolysis (*Kondo et al., 1997*).

Lipid peroxidation reactions of the erythrocyte membrane can only be controlled through the intermediary of antioxidant substances. It is reported

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that the oxidative damage observed in the tissue of preterm infants may due to immature antioxidant defence provided to the fetus by the mother during the final period of pregnancy (*Doyle et al., 1997*).