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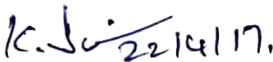
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## TABLE OF CONTENTS

<b>CHAPTER 1: INTRODUCTION</b>	<b>1</b>
1.1 Neonatal anoxia	2
1.2 Causes of anoxia	2
1.3 Epidemiology	3
1.4 Clinical diagnosis	5
1.4.1 APGAR score	5
1.4.2 Sarnat score	5
1.4.3 Pulse Oximetry	5
1.4.4 Analysis of blood lactate & pH	5
1.5 Models for neonatal anoxia	6
1.5.1 Hypoxia–ischemia	6
1.5.2 Perinatal asphyxia	6
1.5.3 Neonatal anoxia	6
1.6 Current treatment for anoxia	7
1.7 Pathophysiology of neonatal anoxia	8
1.8 Apoptosis	10
1.8.1 Extrinsic pathway of apoptosis	10
1.8.2 Intrinsic pathway of apoptosis	10
1.9 Role of pro-apoptotic and apoptotic mediators in mitochondrial-linked cell death	11
1.9.1 Caspases	11
1.9.2 Bcl-2 family proteins	11
1.10 Pathophysiological changes in mitochondrial molecular machinery after anoxia	12
1.11 Hypothesis	14
1.12 Proposed treatment strategies for neonatal anoxia	15
1.13 Key interrogations	17
1.14 Objectives of thesis	18
<b>CHAPTER 2: TEMPORAL PATHOLOGICAL CHANGES IN MITOCHONDRIAL BIOENERGETICS IN TWO EPISODIC ANOXIA MODEL IN RATS</b>	<b>19</b>
2.1 Abstract	20
2.2 Introduction	21
2.3 Materials and methods	22
2.3.1 Animals	22
2.3.2 Anoxia model	22
2.3.3 Reagents	23
2.3.4 Behavioral parameter assessment	24
2.3.5 Mitochondrial Isolation	24
2.3.6 Measurement of mitochondrial function	24
2.3.7 Assessment of brain mitochondrial nitrite level	25
2.3.8 Experimental design	25
2.3.9 Statistical analysis	26
2.4 Results	26
2.5 Discussion	30

<b>CHAPTER 3: MITOCHONDRIAL MEDIATED APOPTOSIS AND INSULT PROGRESSION POST ANOXIA</b>	<b>33</b>
3.1 Abstract	34
3.2 Introduction	35
3.3 Materials and Methods	37
3.3.1 Animals and groups	37
3.3.2 Anoxia procedure	38
3.3.3 Materials	38
3.3.4 Behavioral parameter assessment	38
3.3.5 Measurement of peripheral oxygen saturation	39
3.3.6 Laser speckle blood-flow imaging	39
3.3.7 Mitochondrial Isolation	40
3.3.8 Measurement of Mitochondrial Function	40
3.3.9 Evaluation of mitochondrial membrane potential (MMP) in cortical brain region	40
3.3.10 Estimation of mitochondrial permeability transition pore (MPT) opening	40
3.3.11 Estimation of LPO and NO levels	41
3.3.12 Assessment of mitochondrial SOD and CAT activity	41
3.3.13 Western blot analysis for cytoplasmic cytochrome-C, caspase-9, caspase-3, Bax, Bcl-2 and mitochondrial Bax and Bcl-2	41
3.3.14 Flow cytometric measurement of cell death using AnnexinV/PI	42
3.3.15 Statistical analysis	43
3.4 Results	43
3.5 Discussion	61
<b>CHAPTE 4: MITOCHNDRIAL-LINKED APOPTOTIC MARKERS IN ANOXIC NEONATES</b>	<b>66</b>
4.1 Abstract	67
4.2 Introduction	68
4.3 Material and methods	69
4.3.1 Patients	69
4.3.2 Inclusion Criteria	69
4.3.3 Exclusion Criteria	69
4.3.4 CSF Sampling	70
4.3.5 Cytochrome-C, caspase-9 and caspase-3 measurement	70
4.3.6 Statistical Analysis	70
4.4 Results	70
4.5 Discussion	71
<b>CHAPTER 5: EVALUATION OF MITOCHONDRIAL UNCOUPLER 2,4 DNP IN ANOXIC RATS</b>	<b>74</b>
5.1 Abstract	75
5.2 Introduction	76
5.3 Materials and methods	78
5.3.1 Animals	78
5.3.2 Anoxia model	79
5.3.3 2, 4-DNP preparation and dosing	79

5.3.4	Behavioral parameter assessment	79
5.3.5	Mitochondrial Isolation	79
5.3.6	Measurement of Mitochondrial Function	79
5.3.7	Estimation of NADH dehydrogenase (Complex-I) activity	80
5.3.8	Estimation of mitochondrial succinate dehydrogenase (Complex-II) activity	80
5.3.9	Estimation of cytochrome-C oxidase (Complex-IV) activity	80
5.3.10	Estimation of mitochondrial F1F0 ATP synthase (Complex-V) activity	80
5.3.11	Evaluating mitochondrial membrane potential (MMP)	81
5.3.12	Mitochondrial permeability transition (MPT)	81
5.3.13	Mitochondrial oxidative stress	81
5.3.14	Western blot analysis for cytoplasmic cytochrome-C, caspase-9, caspase-3, Bax, Bcl-2 and mitochondrial Bax and Bcl-2	81
5.3.15	Statistical analysis	82
5.4	Results	94
5.5	Discussion	94

## **CHAPTER 6: EVALUATION OF ANTIOXIDANT TEMPOL IN ANOXIC MODEL** 98

6.1	Abstract	99
6.2	Introduction	100
6.3	Materials and methods	101
6.3.1	Animals	101
6.3.2	Anoxia model	101
6.3.3	Tempol preparation and dosing	101
6.3.4	Chemicals	101
6.3.5	Behavioral parameter assessment	101
6.3.5.1	Righting reflex	101
6.3.5.2	Wire hanging maneuver	101
6.3.6	Mitochondrial Isolation	101
6.3.7	Measurement of Mitochondrial Function	101
6.3.8	Estimation of NADH dehydrogenase (Complex-I) activity	102
6.3.9	Estimation of mitochondrial succinate dehydrogenase (Complex-II) activity	103
6.3.10	Estimation of cytochrome-C oxidase (Complex-IV) activity	103
6.3.11	Estimation of mitochondrial F1F0 ATP synthase (Complex-V) activity	103
6.3.12	Evaluating mitochondrial membrane potential (MMP)	103
6.3.13	Mitochondrial permeability transition (MPT)	103
6.3.14	Mitochondrial oxidative stress	103
6.3.15	Western blot analysis for cytoplasmic cytochrome-C, caspase-9, caspase-3, Bax, Bcl- 2 and mitochondrial Bax and Bcl-2	104
6.3.16	Statistical analysis	104
6.4	Results	104
6.5	Discussion	117



<b>CHAPTER 7: TO STUDY THE COMBINATION EFFECT OF MODULATORS IN TWO DIFFERENT CORTICAL MITOCHONDRIAL FRACTIONS AND LONG TERM NEUROBEHAVIORAL CHANGES POST ANOXIA INJURY</b>	122
7.1 Abstract	123
7.2 Introduction	124
7.3 Materials and methods	126
7.3.1 Animals	126
7.3.2 Anoxia model	127
7.3.3 Drug preparation and dosing	127
7.3.4 Chemicals	127
7.3.5 Synaptic and non-synaptic mitochondria isolation	128
7.3.6 Measurement of Mitochondrial Function	128
7.3.7 Mitochondrial calcium measurements	129
7.3.8 Mitochondrial permeability transition (MPT)	129
7.3.9 Mitochondrial oxidative stress	129
7.3.9.1 Estimation of LPO and NO levels	129
7.3.9.2 Estimation of mitochondrial SOD and CAT activity	129
7.3.10 Western blot analysis for cytoplasmic cytochrome-C, caspase-9, caspase-3, Bax, Bel-2 and mitochondrial Bax and Bel-2	130
7.3.11 Behavioral Studies	130
7.3.12 Plasma Corticosterone	132
7.3.13 Statistical analysis	132
7.4 Results	133
7.5 Discussion	154
<b>CHAPTER 8: SUMMARY AND CONCLUSION</b>	159
<b>REFERENCES</b>	165

## LIST OF FIGURES

<b>Figure 1.1</b> Causes of neonatal anoxia .....	2
<b>Figure 1.2</b> Causes of neonatal deaths in India .....	3
<b>Figure 1.3</b> Prevalence of neonatal anoxia worldwide.....	4
<b>Figure 1.4</b> Insult progression with cell death transition after neonatal anoxia .....	8
<b>Figure 1.5</b> Mitochondrial oxidative stress after anoxia.....	14
<b>Figure 1.6</b> Proposed hypothesis .....	15
<b>Figure 2.1</b> Schematic representation of the experimental design. '+' denotes performed and '-' denotes not performed .....	25
<b>Figure 2.2</b> (A) A typical respiratory trace shows no significant changes in mitochondria bioenergetics at three different time points after first and second anoxic exposure.....	27
<b>Figure 2.3</b> The effect of first and second episodes of anoxia on oxygen consumption in different states of mitochondrial respiration (C and D respectively) and respiratory control ratio (RCR; E and F respectively) in whole brain mitochondria after 30 min, 6 hr. and 24 hr. ....	28
<b>Figure 2.4</b> The effect of first and second episodes of anoxia on whole brain nitrite level (A and B respectively). ....	29
<b>Figure 2.5</b> Changes in reflex latency after (A) first and (B) second episode of anoxic exposure.....	30
<b>Figure 3.1</b> Evaluation of peripheral arterial oxygen saturation by pulse oximetry over time within first (A) and second (B) anoxia episode by passing 100% nitrogen in the anoxia chamber.....	44
<b>Figure 3.2</b> Effect of anoxia on cortical blood flow. (A) Regional blood flow (ROI) in control group with a value of 119.1 (B) in 30 min post-anoxia with ROI 37.5 (C) 24 hr. post-anoxia with ROI 84.9 and (D) on d-7 post-anoxia with ROI 35.4 respectively after anoxia.....	45
<b>Figure 3.3</b> The temporal profile of the mean CBF in pups in the cortical brain region.....	46
<b>Figure 3.4</b> The effect of anoxia-induced changes in the levels of cytochrome-C (B), caspase-9 (C) and caspase-3 (D) in the cytosol fraction at different time points.....	54
<b>Figure 3.5</b> The effect of anoxia-induced changes in the levels of cytoplasmic Bax (B), Bcl-2 (C) and their ratio (Bax/Bcl-2) (D) , in the cytoplasmic fraction at different time points. Blot (A) represents Bax, Bcl-2 and their ratio (Bax/Bcl-2) in cortical region.....	56
<b>Figure 3.6</b> The effect of anoxia-induced changes in the levels of mitochondrial Bax (B), Bcl-2 (C) and their ratio (Bax/Bcl-2) (D), in the mitochondrial fraction at different time points. Blot (A) represents Bax, Bcl-2 and their ratio (Bax/Bcl-2) in cortical region.....	58
<b>Figure 3.7</b> Flow cytogram is depicting anoxia-induced cell death in the cortical region assessed by cytometric analysis using annexin-V/PI. Dotted plots represent control 30 min (A), control 24 hr. (B) control day-7 min (C) anoxia 30 min (D) anoxia 24 hr. (E) and anoxia day-7 (F) respectively.....	59
<b>Figure 3.8</b> Changes in the percentage of apoptotic cells in the cortical region at different time points after second anoxia episode.....	60
<b>Figure 3.9</b> Effect of anoxia on hanging latency (A) and reflex latency (B) from day-1 (P4) up to day-7 (P10) after second anoxia episode.....	61
<b>Figure 4.1</b> Levels of cytochrome-C, caspase-9, and caspase-3 in CSF of control and different stages of HIE in sampe-1 and comparison of the concentration of cytochrome-C, caspase-9, and caspase-3 within HIE group sample-2.....	71
<b>Figure 5.1</b> Effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia-induced mitochondrial (A) NO, (B) LPO, (C) SOD and (D) CAT levels in cortical brain region on day-1 and day-7.....	86
<b>Figure 5.2</b> Effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia-induced mitochondrial complex I (A), II (B), IV (C) and V (D) activity in cortical brain region on day-1 and day-7.....	87

<b>Figure 5.3</b> Effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia-induced changes in (A) mitochondrial membrane potential and (B) mitochondrial permeability transition pore activity in cortical brain region on day-1 and day-7.....	89
<b>Figure 5.4</b> Effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia-induced changes in the levels of expression of cytochrome-C, caspase-9 and caspase-3 on day-1 and day-7.....	90
<b>Figure 5.5</b> Effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia-induced changes in the expression of cytoplasmic Bax (B), Bcl-2 (C) and their ratio (Bax/Bcl-2; D) in cortical brain region on day-1 and day-7.....	91
<b>Figure 5.6</b> Effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia-induced changes in the expression of mitochondrial Bax (B), Bcl-2 (C) and their ratio (Bax/Bcl-2; D) in cortical brain region on day-1 and day-7. Blots (A) represent Bax and Bcl-2 in cortical region.....	92
<b>Figure 5.7</b> The effect of 2,4 DNP (1, 2.5 and 5 mg/kg) on anoxia induced sensorimotor dysfunction [Reflex latency (A) and Hanging latency (B)] on day-1 and day-7.....	93
<b>Figure 6.1</b> Effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced mitochondrial (A) NO, (B) LPO, (C) CAT and (D) SOD levels in cortical brain region on d-1 and d-7.....	108
<b>Figure 6.2</b> Effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced mitochondrial complex I (A), II (B), IV (C) and V (D) activity in cortical brain region on d-1 and d-7.....	109
<b>Figure 6.3</b> The effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced changes in the levels of cytochrome-C (B), caspase-9 (C) and caspase-3 (D), in the cytosol fraction on d-1 and d-7.....	112
<b>Figure 6.4</b> The effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced changes in the levels of expression of cytoplasmic Bax (B), Bcl-2 (C) and their ratio (Bax/Bcl-2; D), in the cytoplasmic fraction on d-1 and d-7. Blots (A) represent Bax and Bcl-2 in cortical region.....	113
<b>Figure 6.5</b> The effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced changes in the levels of mitochondrial Bax (B), Bcl-2 (C) and their ratio of Bax/Bcl-2 (D), in the mitochondrial fraction on d-1 and d-7. Blot (A) represents Bax, Bcl-2 and their ratio (Bax/Bcl-2) in cortical region.....	115
<b>Figure 6.6</b> Effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced sensorimotor dysfunction [reflex latency (A) and hanging latency (B) on d-1 and d-7.....	116
<b>Figure 7.1</b> Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in synaptic mitochondrial (A) s-III and (B) s-IV respiration and (C) RCR in cortical brain region on d-7.....	134
<b>Figure 7.2</b> Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia induced changes in synaptic mitochondrial (A) NO, (B) LPO, (C) SOD and (D) CAT levels in cortical brain region on d-7.....	135
<b>Figure 7.3</b> Effect of 2,4 DNP (2.5 mg/kg), tempol (75 mg/kg) and their combination (D+T) on anoxia-induced changes in synaptic mitochondrial (A) calcium and (B) MPT regarding mitochondrial swelling in cortical brain region on d-7.....	136
<b>Figure 7.4</b> Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in cytochrome-C (B), caspase-9 (C) and caspase-3 (D) on d-7. Blot (A) represents cytochrome-C, caspase-9 or caspase-3 in cortical tissue.....	138
<b>Figure 7.5</b> Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in cytoplasmic (B) Bax, (C) Bcl-2 and (D) Bax/Bcl-2 on d-7. Blot (A) represents Bax, Bcl-2 in cortical brain tissue on d-7.....	139
<b>Figure 7.6</b> Effect of 2, 4 DNP, tempol and their combination (D+T) on anoxia-induced changes in synaptic mitochondrial (B) Bax, (C) Bcl-2 and (D) Bax/Bcl-2 on d-7.....	140
<b>Figure 7.7</b> Effect of DNP, Tempol and their combination (D+T) on anoxia-induced changes in non-synaptic mitochondrial (A) s-III and (B) s-IV respiration and (C) RCR in cortical brain region on day-7..	141
<b>Figure 7.8</b> Effect of 2,4 DNP, Tempol and their combination (D + T) on anoxia-induced changes in non-synaptic mitochondrial (A) NO, (B) LPO, (C) SOD and (D) CAT levels in cortical brain region on day-7. ....	143

**Figure 7.9** Effect of 2,4 DNP, Tempol and their combination (D + T) on anoxia-induced changes in non-synaptic mitochondrial (A) calcium and (B) MPT regarding mitochondrial swelling in cortical brain region on day-7..... 144

137

**Figure 7.10** Effect of 2,4 DNP, Tempol and their combination (D+T) on anoxia-induced changes in non-synaptic mitochondrial Bax (B), Bcl-2 (C) and their ratio (Bax/Bcl-2) (D) on day-7 post-anoxia..... 145

**Figure 7.11** Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in (A) open arm entries (B) time spent in open arms and (C) anxiety index in elevated plus-maze test paradigm. Data are mean+SD (n=5) animals in each group.<sup>a</sup>P<0.05 compared to control, <sup>b</sup>P<0.05 compared to anoxia group. .... 148

**Figure 7.12** Effect of 2,4 DNP, tempol and their combination (D+T) in anoxia-induced changes in total arm entries during trial-1 (A) and trial-2 (B) and coping behavior to novel arm (C) during trial-2 in Y-maze paradigm from d-21 up to d-150. .... 150

**Figure 7.13** Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in arm discrimination behavior during Y-maze test paradigm on d-21(A), d-60 (B), d-90 (C), d-120 (D) and d-150 (E). .... 152

**Figure 7.14** Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in immobility in forced-swim test..... 153

**Figure 7.15** Effect of 2,4 DNP (2.5 mg/kg), tempol (75 mg/kg) and their combination (D+T) on plasma CORT level in anoxia exposed rats..... 154

**Figure 8.1** Proven hypothesis.....162

## LIST OF TABLES

<b>Table 3.1</b> Effect of anoxia on different states of mitochondrial respiration (State 2, State-3, State-4, State-5 via complex-I and State-5 via complex-II) and respiratory control ratio (RCR) at various time points (30 min, 24 hr. and d-7) in the cortical brain region of rat pups.....	49
<b>Table 3.2</b> Effect of anoxia on the levels of Nitrite, LPO, CAT and SOD in the cortical brain region of rat pups at different time points.....	51
<b>Table 3.3</b> Effect of anoxia on mitochondrial membrane potential and mitochondrial swelling in cortical portion of neonatal at different time points.....	52
<b>Table 5.1</b> Dose-related effect of DNP (1, 2.5 and 5 mg/kg) on anoxia-induced changes in mitochondrial respiration on d-1 and d-7.....	84
<b>Table 6.1</b> Dose-related effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced alterations in mitochondrial respiration and RCR on day-1 and day-7.....	106
<b>Table 6.2</b> Effect of tempol (75, 150 and 300 mg/kg) on anoxia-induced changes in (A) mitochondrial membrane potential and (B) mitochondrial permeability transition pore activity in cortical brain region on d-1 and d7.....	110
<b>Table 7.1</b> Effect of 2,4 DNP, tempol and their combination (D+T) on anoxia-induced changes in ambulation, time spent in central grid and rearing during OFT.....	147

## ACRONYMS

ADHD	Attention Deficit Hyperactivity Disorder
PND	Post Natal Day
GABA	Gamma-Aminobutyric acid
NMDA	N-methyl-D-aspartate
EAA	Excitatory Amino Acid
DISC	Death-Inducing Signaling Complex
OMM	Outer Mitochondrial Membrane
IMS	mitochondrial intermembrane space
SMAC	Second Mitochondrial Derived Activator Of Caspases
DIABLO	Diablo IAP-Binding Mitochondrial Protein
Bcl-2 family	B-cell lymphoma-2
ATP	Adenosine triphosphate
ETC	Electron Transport Chain
MMP	Mitochondrial Membrane Potential
ROS	Reactive Oxygen Species
TMRM	Tetramethylrhodamine Methyl Ester
PN	Peroxyntirite
DNA	Deoxyribonucleic Acid
MPT	Mitochondrial Permeability Transition
ANT	Adenine Nucleotide Translocator
VDAC	Voltage-Dependent Anion Channel
APAF1	Apoptotic Protease-Activating Factor-1
2, 4-DNP	2,4 Dinitrophenol
NO	Nitric oxide
MtNOS	Mitochondrial Nitric Oxide Synthase
BSA	Bovine Serum Albumin
EGTA	Ethylene Glycol Bis(2-Aminoethyl Ether)Tetraacetic Acid
HEPES	4-(2-hydroxyethyl)-1-piperazineethanesulfonic acid
ADP	Adenosine Diphosphate
FCCP	Carbonyl Cyanide 4-(Trifluoromethoxy) Phenylhydrazone

CBF	Cerebral Blood flow
RCR	Respiratory Control Ratio
SOD	Superoxide Dismutase
MDA	Malondialdehyde
LPO	Lipid Peroxidation
NBT	Nitroblue Tetrazolium
PMS	Phenazine Methosulphate
SDS-PAGE	Sodium Dodecyl Sulfate-Polyacrylamide Gel Electrophoresis
PVDF	Polyvinylidene Fluoride Membranes
FITC	Fluorescein Isothiocyanate
PI	Propidium Iodide
HPA axis	Hypothalamic–Pituitary–Adrenal Axis

## **PREFACE**

The research work of the thesis entitled “Evaluation of some mitochondrial modulators in the treatment of neonatal anoxia” is based on the identification of a novel mitochondrial-targeted mechanism through which the cortical neuronal cell death progresses in developing brain can be prevented. Moreover, by preserving the mitochondrial function on certain time points may be helpful in improving neurobehavioral outcomes in newborns. The whole work has compiled into eight chapters: **Chapter 1** introduces the topic and its importance. **Chapter 2** investigates the temporal dynamics of mitochondrial bioenergetics after anoxia in rat pups (neonates). **Chapter 3** evaluates mitochondrial dysfunction linked progression of insult and transition of cell death after anoxia. **Chapter 4** investigates the clinical basis of mitochondrial-linked apoptotic markers in the cerebrospinal fluid of anoxic neonates. **Chapter 5** investigates the role of 2,4 dinitrophenol (2,4 DNP) on anoxia-induced mitochondrial dysfunction linked insult progression. **Chapter 6** investigates the role of tempol on anoxia-induced mitochondrial dysfunction induced insult progression. **Chapter 7** describes the combined effect of mitochondrial modulators (2,4 DNP and tempol) for any synergistic or additive effect in the treatment of anoxia-induced synaptic and non-synaptic mitochondrial dysfunction and neurobehavioral alterations from day-21 up to day-150. **Chapter 8** summarizes the study with its important outcomes. It also discusses the future perspective of the work and its potential benefits for science and humanity.