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## **LIST OF ABBREVIATIONS & SYMBOLS**

5-HIAA: 5-Hydroxyindoleacetic Acid

5-HT: Serotonin

ACh: Acetylcholine

AChE: Acetylcholinesterase

ACTH: Adreno Corticotrophin Hormone

AMY: Amygdala

ANOVA: Analysis of Variance

BNST: Bed Nucleus of the Stria Terminalis

CMC: Carboxymethyl Cellulose

CORT: Corticosterone

CRF: Corticotropin-Releasing Factor

CRF-R1: Corticotropin-Releasing Factor-Receptor1

DA: Dopamine

DRN: Dorsal Raphe Nucleus

Drp-1: Dynamin-Related Protein

DSM-V: Diagnostic and Statistical Manual of Mental Disorders

ECD: Electrochemical Detector

EDS: Extra-Dimensional Shift

EPM: Elevated Plus Maze

FDA: Food and Drug Administration

FS: Foot Shock

FST: Forced Swim Test

GC: Glucocorticoid

GR: Glucocorticoid Receptor

HIP: Hippocampus

HPA-Axis: Hypothalamic–Pituitary–Adrenal-Axis

HPLC: High Performance Liquid Chromatography

ICV: Intracerebroventricular

IDS: Intra-Dimensional Shift

LC: Locus Coeruleus

MANOVA: Multivariate Analysis of Variance

MAO: Monoamine Oxidase

Mfn-1,2: Mitofusin-1,2

MMP: Mitochondrial Membrane Potential

MR: Mineralocorticoid Receptor

MTFP-1: Mitochondrial Fission Process

m-TOR: Mammalian Target of Rapamycin

mTORC-1: Mammalian Target of Rapamycin Complex-1

NE: Norepinephrine

Opa-1: Optic Atrophy-1

OX1-R: Orexin Receptor-1

OX2-R: Orexin Receptor-2

PAX: Paroxetine

PFC: Prefrontal Cortex

PTSD: Post-traumatic Stress Disorder

PVN: Paraventricular Nucleus

RAPA: Rapamycin

RCR: Respiratory Control Ratio

ROS: Reactive Oxygen Species



SERT: Sertraline

SSRIs: Selective Serotonin Reuptake Inhibitors

SUVO: Suvorexant

UV: Ultraviolet

VTA: Ventral Tegmental Area

$\alpha$ -7nAChR: Alpha-7nicotinic Acetylcholine Receptor

%: Percent

cm: Centimeter

D: Day

g: Gram

h: Hour

kg: Kilogram

mA: Milliampere

mg: Milligram

min: Minute

mM: millimole

nm: Nanometer

pg: Picogram

PO: Per Oral

sec: Second

$\mu$ L: Microlitre

## **PREFACE**

The thesis research work entitled "Pharmacological Evaluation of Orexin Antagonist in the Experimental Model of Post-Traumatic Stress Disorder" assessed the involvement of the orexinergic system in the stress re-stress (SRS) model of PTSD and its pharmacological effects on PTSD-like symptoms. Further, during PTSD, there is a negative alteration in cognitive function due to the fear response of traumatic events, which is interpreted as cognitive inflexibility. Cognitive inflexibility is one of the clinically observed major symptoms of PTSD, together with fear and anxiety. Therefore, we evaluated cognitive inflexibility for the first time in the SRS paradigm. Moreover, we have evaluated the alteration of mitochondrial dynamics in the SRS model as an alternative pathology of PTSD and the role of orexinergic antagonism on mitochondrial dynamics in rats exhibiting PTSD-like symptoms.

The whole work has been compiled into **five chapters**: **Chapter 1** introduces the topic and its importance. **Chapter 2** reports the anti-PTSD potential of orexin antagonist in SRS exposed rats. **Chapter 3** reports the validation of cognitive inflexibility in the SRS model of PTSD. **Chapter 4** documents the effect of orexin antagonist on mitochondrial dynamics in rats exhibiting PTSD-like symptoms. **Chapter 5** summarizes the entire study with the conclusion and important outcomes.