

The Clinical Utility of Serum Brain Derived Neurotrophic Factor in Bipolar Affective Disorder

Thesis

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List of Abbreviations

AD	: Atopic dermatitis
ADHD	: attention deficit hyperactive disorder
AHR	: Airway hyper-reactivity
BAD	: Bipolar affective disorder
Bcl2	: B cell lymphoma 2
BD	: Bipolar disorder
BDNF	: Brain derived neurotrophic factor
BD-NOS	: Bipolar disorder not other wised specified
CaMK	: Calcium/calmodulin-dependent protein kinase
CBP	: CREB binding protein
CE	: Capillary electrophoresis
CNS	: Cental nervous system
CNTF	: Ciliary neurotrophic factor
CPE	: Carboxypeptidase E
CREB	: cAMP response element-binding protein
CSF	: Cerebrospinal fluid
DAG	: Diacyl glycerol
DD-NOS	: Depressive disorder not other wised specified
DEP	: Diesel exhausts particulates
DNMT	: DNA methyl transferase
DSM IV TR	: Diagnostic and Statistical Manual of Mental Disorder text revision
EAE	: Experimental autoimmune encephalomyelitis
ECT	: Electroconvulsive therapy
ELISA	: Enzyme linked immunoassays
ERK	: Extracellular receptor-coupled kinase
FEV1	: Forced expiratory volume in 1 second
FGF	: Fibroblast growth factor
FGFR	: Fibroblast growth factor receptor
GABA	: Gamma amino butyric acid
HAT	: Histone acetyl transferase
HCV	: Hepatitis C virus
HDACs	: Histone deacetylases
HMTs	: Histone methyl transferases

List of Abbreviations (Cont...)

ICE	: Immunoaffinity capillary electrophoresis
IFNγ	: Interferon γ
IHC	: Immunohistochemistry
IL	: Interleukin
JCA	: Juvenile chronic arthritis
JNK	: Jun N terminal kinase
KD	: Kawasaki disease
Kda	: Kilo Dalton
LDL	: Low-density lipoprotein
LIF	: Laser induced fluorescence
Mabs	: Monoclonal antibodies
MAPK	: Mitogen-activated protein kinase
MDD	: Major depressive disorder
MeCP2	: Methyl CPG binding protein 2
MEK	: Methyl ethyl ketone
Met	: Methionine
MRI	: magnetic resonance imaging
MS	: Multiple sclerosis
MSP	: Methylation specific PCR
NAc	: Nucleus accumbens
NAD	: Nicotinamine adenine dinucleotide
NF-KB	: Nuclear factor kappa B
NGF	: Nerve growth factor
NGFR	: Nerve growth factor
NMDA	: N-methyl-D-aspartate
NT-3	: Neurotrophin-3
NT-4/5	: Neurotrophin 4/5
PBS	: Phosphate buffer saline
PC	: Proconvertase
PFC	: Prefrontal cortex
PI3K	: Phosphatidylinositol 3- kinase
PKC	: Protein kinase C
PLC	: Phospholipase C
PMD	: Psychotic major depression

List of Abbreviations (Cont...)

Poly A	: Polyadenylation
PPD	: Postpartum depression
Pro NT	: Pro neurotrophin
PTSD	: Post traumatic stress disorder
QM-MSP	: Quantitative multiplex methylation specific PCR
Q-MSP	: Quantitative methylation specific PCR
RA	: Rheumatoid arthritis
RBD	: recurrent brief depression
RIA	: Radioimmunoassays
ROIs	: Regions of interest
RT-PCR	: Reverse transcription polymerase chain reaction
SAD	: seasonal affective disorder
SLE	: Systemic lupus erythematosus
TGFβ	: Transforming growth factor beta
Th	: T helper
Trk	: Tyrosine kinase
Val	: Valine
VEGF	: Vascular endothelial growth factor

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Introduction

Bipolar affective disorder, historically known as manic–depressive disorder, is a psychiatric diagnosis that describes a category of mood disorders defined by the presence of one or more episodes of abnormally elevated energy levels, cognition, and mood with or without one or more depressive episodes (*Blumer, 2002*). The elevated moods are clinically referred to as mania or, if milder, hypomania. Individuals who experience manic episodes also commonly experience depressive episodes, or symptoms, or a mixed state in which features of both mania and depression are present at the same time (*Basco and Ramirez, 2006*). These events are usually separated by periods of "normal" mood; but, in some individuals, depression and mania may rapidly alternate (*Yatham and Lakshmi, 2010*).

Bipolar disorder can cause suicidal ideation that leads to suicidal attempts (*Novick et al., 2010*). The annual average suicide rate is 0.4%, which is 10 to 20 times that of the general population (*Benjamin et al., 2010*).

Neurotrophins are a family of proteins that belong to a class of growth factors, which are capable of signaling particular cells to survive, differentiate, or grow (*Allen and Dawbarn, 2006*). These growth factors are known as neurotrophic factors. They are secreted by target tissue and act by preventing the associated neuron from initiating programmed cell death; thus allowing the neurons to survive (*Hempstead, 2006 and Reichardt, 2006*).