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)***.