



## BIPOLAR DISORDERS Factsheet

April 2019

### What are neurotrophins?

Neurotrophins, such as nerve growth factor (NGF) and brain-derived neurotrophic factor (BDNF), regulate neuronal survival and growth during development. Effects of neurotrophins on neuronal transmission in the hippocampus, cortex, cerebellum and basal forebrain are important for learning and memory processes. Reduced neurotrophins may affect synaptic efficiency and connectivity in bipolar disorder that is hypothesised to underpin signs and symptoms of the disorder.

### What is the evidence for neurotrophins?

High quality evidence suggests a small increase in blood NGF levels in unmedicated people with bipolar disorder compared to controls.

Moderate quality evidence suggests a medium-sized increase in blood neurotrophin-3 and neurotrophin-4/5 levels in people with bipolar disorder (compared to controls) during a depressive state, but not during a manic or euthymia (normal mood) state.

Moderate quality evidence also suggests an overall small decrease in blood BDNF levels in people with bipolar disorder compared to controls. This effect is medium-sized when patients are in a manic state, and large in a depressive state, with no effect during euthymia. The effects increase with increased symptom severity and decrease with longer duration of illness. There was a small increase in blood BDNF levels with pharmacological treatment for mania but not for depression, and a medium-sized increase in blood BDNF levels after treatment with electroconvulsive therapy.

For more information see the technical table



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*NeuRA (Neuroscience Research Australia) is one of the largest independent medical and clinical research institutes in Australia and an international leader in neurological research.*

*Diseases of the brain and nervous system pose the greatest health, economic and social burden of any disease group because they are chronic, debilitating and have no known cures.*

*Medical research is the cornerstone of efforts to advance the health and wellbeing of families and the community. Our dedicated scientists are focussed on transforming their research into significant and practical benefits for all patients.*

*While we hope you find this information useful, it is always important to discuss any questions about schizophrenia or its treatment with your doctor or other health care provider.*

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