



## BIPOLAR DISORDERS Factsheet

December 2021

### What are neurometabolites?

Products of normal chemical metabolism may be altered in bipolar disorder. Changes in metabolite levels may be indicative of altered biochemical activity. Magnetic resonance spectroscopy (MRS) has been used to measure levels of metabolites, such as N-acetylaspartate (NAA), creatine (Cr), trimethylamines/ choline containing compounds (Cho) and glutamine (Gln). These derivatives are indirect indicators of biochemical activity. Alteration in levels of NAA/Cr is associated with the protective myelin sheath surrounding neurons, which is used as a marker of neural cell viability. Decreased levels of NAA are associated with neuron death, or injury to the part of the neuron that connects to other cells, the axon. Gln is a metabolite of the neurotransmitter, glutamate (Glu).

### What is the evidence for changes in neurometabolites in people with bipolar disorder?

Moderate quality evidence suggests a medium-sized effect of decreased NAA levels in the basal ganglia, a large effect of decreased NAA/Cr ratio in the hippocampus, and a small trend effect of increased NAA levels in the frontal lobes of people with bipolar disorder compared to controls. There were no differences in Cr and Cho levels, or NAA and other ratios in any other brain region.

For more information see the technical table

### HOW YOUR SUPPORT HELPS

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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 bipolar disorder or its treatment with your doctor or other health care provider.*