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SCHIZOPHRENIA Factsheet

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What is NMDA receptor function?

Converging evidence suggests NMDA receptor hypofunction may contribute to the expression of schizophrenia. The NMDA receptor consists of several subunits; the NR1 subunits that bind coagonists glycine and d-serine, the NR2 subunits that bind the neurotransmitter glutamate, and the NR3 subunits that bind glycine. The NMDA receptor is activated by binding glutamate and a coagonist. Glutamate is the major excitatory neurotransmitter in the brain and is crucial to normal brain function. In schizophrenia, there may be changes in levels of glutamate and its metabolites, and changes in levels or activity of mechanical components of the NMDA receptor system, such as the receptors that 'receive' glutamate, or the transporters that 'remove' it.

What is the evidence for NMDA receptor function?

Moderate to high quality evidence suggests medium-sized increases in peripheral glutamate as measured in serum or plasma in people with schizophrenia compared to controls. The effect is largest in drug-naïve or non-medicated patients and in studies using high-performance liquid chromatography to measure glutamate. There were small to medium-sized decreases in glutamate as measured using Magnetic Resonance Spectroscopy, and increases in glutamine in the frontal cortex of people with schizophrenia. There was also a medium-sized decrease in glutamate in the thalamus of people at clinical high risk, and a medium-sized increase in glutamate+glutamine in the frontal lobe of people at genetic high risk. Moderate quality evidence finds medium-sized decreases of NR1 mRNA expression and protein levels, and increases in blood serine levels in people with schizophrenia.

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.

HOW YOUR SUPPORT HELPS

We are able to make significant advances due to the generosity of countless people. Your donation allows us to continue to work towards transforming lives. For information on how you can support our research, phone **1300 888 019** or make a secure donation at **neura.edu.au/donate/schizophrenia**.

NeuRA (Neuroscience Research Australia) Foundation
T 1300 888 019 **F** +61 2 9399 1082
ABN 57 008 429 961

Margarete Ainsworth Building
Barker Street, Randwick NSW 2031
PO Box 1165 Randwick Sydney NSW 2031 Australia

neura.edu.au